University of Alberta

Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta

by

Gloria G. Leraand

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements for the degree of Master of Nursing

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled SOCIAL SUPPORT AND RISK OF DEPRESSION AT EIGHT WEEKS POSTPARTUM IN MOTHERS IN RURAL ALBERTA submitted by Gloria G. Leraand in partial fulfilment of the requirements for the degree of Master of Nursing.

Dr. B. O' Brien

Dr. T. Davis

Dr. N. Gibson

Date 25 April 94

DEDICATION

This thesis is dedicated to mothers in rural Alberta, particularly the mothers who made time in their busy lives to participate in the focus group interview that preceded this study; the mothers who responded to the survey; and to the memory of my grandmothers, Mary Ann Hogg Simpson and Wilma Lucille Chapman Jacobus.

ABSTRACT

Depressive episodes are common in postpartum women, but little is known about the prevalence of this problem and factors associated with it in rural Alberta. The purpose of this study was to determine the proportion of adult mothers in a rural regional health authority (RHA) area who are at risk for depression at eight weeks postpartum, and to describe the relationship between social support and depression risk. A descriptive cross sectional correlation survey design was used. Pre-testing of the survey was done in a focus group interview with five postpartum mothers.

Demographic data were obtained from the health record for 203 eligible mothers. Seventy-three primiparous and multiparous mothers (36%) from rural communities in the RHA completed two structured questionnaires, the Edinburgh Postnatal Depression Scale (EPDS) and the Norbeck Social Support Questionnaire (NSSQ), and a personal information sheet. Seven variables were analyzed to compare respondent to non-respondent mothers (e.g. age, gravidity, type of delivery). Married mothers were disproportionately represented in the sample ($p = .008$) otherwise there were no differences. Based on EPDS scores of ≥ 10, 17 (23.3%) mothers were at risk for depression at eight weeks postpartum. Eight social support variables and ten socio-demographic characteristics, such as education and travel time to health providers, were analyzed and relationships to depression assessed. Partner support ($p = .001$) and history of depression ($p = .000$) were positively correlated with depression risk. Breastfeeding was negatively correlated ($p = .001$). Using logistic regression analysis, a model was developed that accurately predicted depression risk over 82 percent of the time in this sample. Content analysis of written comments by 55 mothers adds richness to the study.

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CHAPTER 1

INTRODUCTION

Pregnancy, childbirth and the puerperium are normal physiologic states. They are periods of adaptation and transition characterized by psychological, emotional and sociocultural adjustment for the mother. There are rapid and extensive physical changes for both the mother and the infant. Strong personal and societal expectations are associated with the birth of a new baby. Changes in family functioning must occur and there are new skills to master and new knowledge to acquire (Mercer & Ferketich, 1990). These changes are stressful for women and their families (Rickett, 1987). Other major stressful events may occur concurrently such as changes in employment, housing and financial status. Stressful life events are defined as those circumstances that require or bring about major change in a person's daily life (Holmes & Rahe, 1967). In a rating of life events for stressfulness, Holmes and Rahe classified pregnancy and acquiring a new family member among the top twenty of forty-three major stressors. The puerperium has been described as a maturational or transitional crisis (Hawkins & Gorvine, 1985; Majewski, 1985). The mental health of the mother is a crucial aspect of this complex period. Depression in the postpartum is an emotional problem that predisposes women and their family members to adverse short and long term consequences.

Statement of the Problem

Emotional distress in the postpartum period often lasts for many months (Feggetter, Cooper & Gath, 1981; Kumar & Robson, 1984; McIntosh, 1993). It has been shown to be related to disruption of marital and other family relationships (Ballard,

Davis, Cullen, Mohan & Dean, 1994). Social and psychological maladjustment can have deleterious temporary and permanent effects for all members of the family unit (Motuk, 1989). Specifically, mood disorders in this period have negative and far-reaching effects on the mother and her infant. At its least severe, dysphoria and other psychological symptoms create an unpleasant subjective experience and contribute to disruptions in maternal-infant interactions (Hay, 1997; Murray & Cooper, 1997; Campbell & Cohn, 1997). Attachment disorders and persistent behaviour and psychosocial problems for the child extending to school age have been documented (Murray, 1992). Unless maternal symptoms are severe and role dysfunction is substantial, however, depression is often not recognized by affected women and their health care providers (Briscoe, 1989; Dalton & Holton, 1996; Illingworth, 1989; Scott, 1987; Taylor, 1989).

Prevalence of depression among postpartum women has been studied in different societies, but the majority of the studies reported were conducted in the United States and Great Britain (Cox, 1986; O'Hara, 1994; Scott, 1987). Canadian studies between 1988 and 1993 include women in large urban centres. No published reports could be found concerning depression in rural postpartum women in North America.

Description of Community Characteristics

Living conditions in rural Alberta are diverse. Women live on farms and acreages, in hamlets, villages or small towns. Farms vary from small mixed operations to large specialized businesses such as dairy farms. There may be more than one family dwelling in a yard, or people may live many kilometres from the nearest neighbour and/or population centre. Most homes have power, telephone, indoor plumbing, adequate

sewage and running water. Road conditions range from narrow dirt or gravel roads to main highways.

Rural communities vary in their social, recreational and other resources. A range of socioeconomic situations exists within a relatively small population. Although agriculture, forestry and oil and gas industries are the main industries, a post-secondary educational institution in the area is one of the major employers of highly educated workers. In most of the communities in this study there are no supportive services such as lactation consultants or postpartum support groups. People often are a half hour or more by car from health care. Many women obtain maternity care an hour or more away from their home. Women may or may not have reliable or readily available transportation. In some families when the husband is away the wife may be without transportation for long periods of time. Even in towns and villages, people who do not own vehicles have no means of transportation. With the exception of taxi services that operate in some communities, rural areas in the regional health authority (RHA) where the study was done have no local public transportation. Environmental factors may thus be quite different and access to health care and other supports restricted, compared to urban centres. The extent to which such factors may affect the social and emotional wellbeing of postpartum mothers is not known.

Purpose of the Study

The purpose of this study was to determine the proportion of rural women in one RHA area at approximately eight weeks postpartum who are at risk for depression, to assess the amount and nature of social support perceived to be available to them, and to

describe the relationships between social support and depression risk. Based on estimates in the literature of the prevalence of postpartum depression, 10 percent of mothers in the study were expected to be at risk of depression.

Operational Definitions

Risk for Postpartum Depression

Women at risk for depression in the postpartum period are defined as those scoring at and above ten on the Edinburgh Postnatal Depression Scale (EPDS).

Rural

Rural is defined as a community of less than 10,000 population and an individual farm or acreage more than 50 kilometres from a community with a population of 10,000 or more.

Social Support

Social support is defined as the total functional and network support that a woman identifies as available to her from members of her social network. Subscale and total scale scores as measured by the Norbeck Social Support Questionnaire (NSSQ) determine the emotional and tangible support that the mother perceives. This includes who provides the support, the size of the support network, the frequency of contact and the duration of the relationships the mother has with members of her support network.

CHAPTER 2

LITERATURE REVIEW

An overview of depression as a clinically diagnosable condition will be given to provide a basis for the particular focus on the nature, prevalence and consequences of depression as it affects postpartum women. Rurality and its possible relationship to depression is discussed. Factors that are associated with postnatal depression are described with emphasis on social support.

A search was done of the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline, PsycINFO and Sociofile databases and the library catalogue. Key words for the searches were depression, puerperium, postpartum, postnatal, psychological wellbeing or mental health, rural, rural areas, rural health, rural health services, support, social support, and coping. A hand search was done of citations in journal articles and the resource list published by Postpartum Support, International.

Health Needs in the Postpartum Period

The purpose of postpartum care is to promote optimal physical and emotional health of the mother, newborn, and family unit in the context of their environment. Nurses can assess women and identify those who may be at risk for developing health problems. Identifying problems early and intervening appropriately will assist the mother to attain the knowledge, skills and resources necessary to adequately meet her physical, emotional and developmental needs and those of her infant.

Although childbearing is a normal process, it is a period in which all members of the family are particularly vulnerable (Ament, 1989). Physical conditions such as

maternal haemorrhage or infant hyperbilirubinemia can quickly lead to life-threatening situations or permanent physiologic damage. Siblings may experience disturbances in relationships and behaviour. Partners are also affected by relationship changes and may have psychological adjustment problems (Fawcett & York, 1986). Mothers have many information needs. Concerns identified by postpartum women range from aspects of physical care of the infant and themselves to sibling and family role adjustment (Campbell, 1993; Gjerdingen, Froberg & Wilson, 1986; Harrison & Hicks, 1983; Smith, 1989). Primiparous women report more minor concerns than multiparae, but Smith (1989) reports no differences between the two groups regarding major concerns. Nearly half of the multiparae in Smith's study identified emotional tension as a major problem. In a study of first time mothers McIntosh (1993) found that stress and demands of motherhood play a significant role in the emergence of depression. Although psychological disturbance is common among postpartum women it is usually hidden.

Depression

Depression is the most common mental health problem in the population. It is one of a class of disorders that have a disturbance in mood (affect) as the predominant feature. Various models have been proposed over many centuries to explain the phenomena of depression. Although unclear, the aetiology of depressive illness is believed to be a multifactorial, complex combination of biological, psychological and social factors (Beaudet, 1996; Kuzel, 1996).

Variations in mood are normal and everyone has transitory feelings of being sad, "down", depressed or discouraged. Sadness occurs as a normal reaction to negative

events such as bereavement and other losses. For some people these emotional reactions and periods of sadness happen in the absence of a precipitating adverse event, are severe and persistent, are accompanied by other symptoms, and may become depressive episodes. Several terms are used in research and clinical practice to refer to depression, such as depressive feelings, depressive episode, melancholia, major or minor depression and depressive disorder. Until the 1980s there was little agreement among experts as to a precise definition for the syndrome. Development of the Diagnostic and Statistical Manual III (DSM-III, 1980) and the subsequent revision by the American Psychiatric Association (DSM-III-R, 1987) resulted in a consensus regarding criteria for identifying unipolar depression and differentiating depressive episodes from grief or bereavement reactions, adjustment disorders, bipolar disorder and anxiety disorders.

Clinical Diagnosis of Depressive Illness

According to the DSM-IV (American Psychiatric Association, 1994), criteria for the clinical diagnosis of depression are a depressed mood or feelings of persistent sadness, hopelessness or feelings of emptiness or lack of feelings, and/or exaggerated irritability or anger most of the day nearly every day for at least two weeks, accompanied by four or more of the following: insomnia or hypersomnia most days, diminished interest in most activities, psychomotor agitation or retardation, decreased or increased appetite with significant weight changes without dieting, fatigue or loss of energy, feelings of excessive guilt or worthlessness, indecisiveness or diminished concentration, recurrent thoughts of or preoccupation with thoughts of death and/or suicide. Loss of memory and unexplained somatic complaints may also be symptoms of depression.

Social, occupational and/or other important functioning is impaired. Some persons who experience depressive episodes exhibit psychotic symptoms, that is, delusions and/or hallucinations. Depressive episodes vary in severity from mild to severe, but even in mild cases there is significant emotional distress.

Atypical presentations of depression occur in some people. These individuals are often good at masking their mood and can appear to react appropriately to environmental stimuli in that they act as though they are cheery during positive events and thus conceal inner feelings (Hagerty, 1995). Symptoms of anxiety such as excess worry, fatiguability and mental and muscular tension occur frequently in atypical presentations which can further mask the depression.

Onset of depression is often insidious with symptoms developing over days or weeks. Episodes may be brief, resolving spontaneously after a few weeks or they may persist for six months or more. Although some people who experience a depressive episode have only a single occurrence, as many as 85 percent of persons will have one or more subsequent episodes which typically progress in severity (Hagerty, 1995). Researchers estimate that in as many as a fifth of cases recovery is delayed longer than a year and for some individuals there may even be longer term impairments in areas of functioning that affect relationships and productivity.

Prevalence of Depression in the General Population

In studies of depression in Canadian communities the true lifetime prevalence of depression is estimated as approximately 25 percent for women and 12 percent for men (Beaudet, 1996). Newman, Bland, and Orn (1988) report that about 75 percent of women

who develop a depressive disorder will have done so by the time they are 31 years of age. These figures are consistent with studies in the United States and other western countries (Newman et al.; Diverty & Beaudet, 1997). Results of studies of depression in the general population demonstrate that fewer than half the people who meet diagnostic criteria seek professional help for their symptoms (Diverty & Beaudet). Non-response tends to be fairly well distributed across socioeconomic variables, in community studies, and the rate of disorders in non-respondents is believed to be no more than twice that of participants (Orn, Newman & Bland, 1988).

In a large psychiatric epidemiological study in Edmonton, the lifetime morbidity risk for major depressive disorder in women was 22.3 percent (Newman, Bland & Orn, 1988). The Edmonton study is part of an international project and the authors state that they "found somewhat higher rates for major depressive episode" (p. 31) but in general the results were similar to findings in the other study centres. The researchers compare Edmonton rates to European rates of 14.4, 32.6 and 20.2 percent (Newman, Bland & Orn, 1988). Combined lifetime prevalence rates of depressive illness are reported as 16.6 percent (Bland, Newman & Orn, 1988; Bland, Orn & Newman, 1988). According to the 1994-95 National Population Health Survey, the rate of depressive illness among women in Canada is 7.3 percent (Beaudet, 1996).

Depression in Rural Populations

Rural areas are defined by Statistics Canada (1992) as areas with population density less than 400 persons per square kilometre. The definition of rural that is used for the United States census includes all areas up to towns and villages with a population of

2500 (Weinert & Burman, 1994). While the term rural refers to place of residence it may also imply sociocultural differences such as attitudes toward health-seeking behaviours, and differences in the variety and availability of health care and supportive programs or services (Weinert & Burman).

Few studies have been done regarding the psychological well-being of rural residents or the prevalence of mood disorders in rural areas (Bigbee, 1988; Parikh, Wasylenki, Goering & Wong, 1996). Comparisons of rates of depression in rural and urban populations show no differences or mixed results (Bigbee, 1988; Mansfield, et al., 1988; Mueller, 1981). When higher rates of depression are observed among urban populations this is only among metropolitan areas with more than 3,000,000 residents (Mueller, 1981). Results of a survey of 185 new mothers in rural south Australia show that nearly 60 percent of respondents were depressed (Griepsma, et al., 1994). Very high rates of depression reported for rural women in Pakistan (Mumford, Nazir, Jilani & Baig, 1996) and in China (Pearson, 1995) are correlated with low socioeconomic status and poor education. There is strong evidence that rural life in these societies is stressful and that rural life is not protective against depression.

Mood disorders in a community population in rural Nova Scotia have comparable point prevalence rates to other general populations (Murphy, 1990). Murphy states that most of these individuals with depression are untreated despite the seriousness of their condition. More than 80 per cent of these cases are associated with poor outcomes such as prolonged illness and poor occupational and psychosocial functioning.

No differences were found for any affective disorder between rural and urban samples in a large Ontario study (Parikh, et al., 1995). These authors report depression

rates of 4 to 5 percent among 15 to 64 year olds. Although the demographic characteristics of the total study sample differed significantly between rural and urban groups, the demographic characteristics of those people with affective disorders did not. One striking finding was that more than 60 percent of rural subjects with depression did not seek treatment compared to 45 per cent of urban subjects. A commonly held belief that would be a possible explanation for this difference is that there may be more social supports in rural than in urban settings (Wallace & O'Hara, 1992). Long (1993) points out that across a wide variety of settings rural dwellers tend to tolerate health impairments longer and seek assistance and utilize services less than urban counterparts. Other researchers report that rural residents are more inclined to be self reliant, hold more traditional values, use more family and community support and keep problems to themselves (Blazer, et al., 1985; Bushy, 1990a; Mansfield, Preston & Crawford, 1988). In some studies involving rural women, fear of exposure in small communities deterred women from seeking help (Bushy, 1990b).

In an American study of rural women 18 to 54 years, rates of depression over 40 percent were observed in some age groups (Hauenstein & Boyd, 1994). Young age, low education, and unemployment were the risk factors associated with depressive symptoms (Hauenstein & Boyd). Features of a rural environment that contribute to the increased risk of depression in women are isolation and less availability of adult education, job training, employment opportunities and child care. Even in studies in which rates of illness are similar for rural and urban women, significant differences are reported in the pattern of stressors, particularly those related to life events and family relationships (Bigbee, 1984, 1988). Rural women are more likely to have gender-role conflicts, problems of isolation,

and inadequate support services than urban women. Others report that the presence of children at home is more stressful for rural women but for both populations the most prevalent source of stress is family and friends (Mansfield, et al., 1988). Differences between the Canadian and U.S. health care systems whereby residents in rural areas in America may have limited access to medical insurance, compared to universality in the Canadian system, add to the difficulty in making valid comparisons between the two countries. In planning and delivering services, nurses should not assume that the needs, resources, and health status of people in a particular setting are the same as for people in other, different settings. Present day rural communities are diverse and any generalizations must be carefully considered (Ellis & Gordon, 1991).

Depression in the Puerperium

Depression is one of the most common and most serious problems of the puerperium. It has been recorded from the time of Hippocrates and described in medical literature for hundreds of years (Buist, 1996; Cox, 1986). The first documented scientific studies of postnatal depression were done by Marce and others in the mid-1800s in France and involved women suffering from serious psychoses (Cox, 1986). Until the work of Pitt (1968), nonpsychotic depression in the puerperium received little attention. Since that time numerous studies of depression after childbirth have been reported (O'Hara, 1994). Whether or not depression after childbirth is a phenomenon of western cultures has seldom been studied anthropologically (Stern & Kruckman, 1983). Cox (1986) reports rates of depression in Ugandan women that are similar to rates observed among women in Scotland. Difficulties in translating instruments and the paucity of

comparable cross-cultural assessment methods make it very difficult to understand the prevalence and nature of postnatal depression throughout the world (O'Hara, 1994).

Regardless of the country in which they live, postpartum women with depression tend not to be treated, largely because the majority of these women do not recognize that they are depressed; nor do health professionals or family members. Several researchers report that most depressed mothers do not report their symptoms (Brockington & Cox-Roper, 1988; Cox, 1986; Taylor, 1989; Whitton, Warner & Appleby, 1996). Of the mothers who described their symptoms to health professionals and who were subsequently assessed by researchers as having major or minor depression, only a few had been diagnosed by their health professional (Briscoe, 1989; Cox, Connor & Kendall, 1982; Illingworth, 1989). Except for a small proportion of cases, it is only when depressive symptoms are explicitly screened that depression is identified. In a study reported by Janzen & Stewart (1990), 30 percent of mothers were identified as feeling depressed but only 11.8 percent received help. Numerous explanations are tendered for such findings. For example, fatigue and sleep disturbances, emotional lability, anxiety and irritability are considered 'normal' sequelae of caring for a new infant. Mothers often underestimate the physical and emotional demands of dealing with the changes in their lives and the challenges of caring for a newborn. Women "believe that they are just bogged down by utter exhaustion and irritability....It is all too easy for them to blame their condition on the extra work that a baby brings" (Dalton, 1980, p. 4).

Societal attitudes and the expectations of mothers themselves about their maternal role, such as the belief that motherhood is instinctive and they should be happy, causes some mothers to be too embarrassed or ashamed to admit their symptoms (Beck, 1992,

1995; Cox, 1986). In an Australian study that involved over 5000 mothers, middle class and professional mothers had more resources and support available to them than underprivileged women but "were unwilling to admit that they had a problem and to seek professional help" (Illingworth, 1989, p. 341). In some instances mothers conceal their feelings (Illingworth; Scott, 1987). Others do not report their feelings because they believe the purpose of the health professionals' contacts is the wellbeing and development of the infant (Scott). These views may be reinforced by the common practice of recommending only one or two visits postpartum by a nurse and physician (Gjerdingen, Froberg, Chaloner, & McGovern, 1993).

Diagnostic Classification of Depression in Postpartum Mothers

No specific classification exists for postpartum mental disorders in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) although the modifier 'postpartum onset' can be used in conjunction with a diagnosed mood disorder (American Psychiatric Association, 1994). Whether depression in the postnatal period is qualitatively or etiologically distinct, or both, from other episodes of depression is not known. In the most recent version of the International Classification of Diseases (ICD-10) there is a category for puerperal mental disorders but it is only to be used if the condition cannot otherwise be classified (Cox, 1994).

Various terms are used to describe psychological disturbances after childbirth. The term postpartum depression has been broadly used to include all psychological problems of this period but generally three distinct phenomena are defined: maternity "blues", postpartum psychoses, and nonpsychotic depression. Blues and nonpsychotic

depression are classified as mood or affective disorders. Episodes of blues are reported to occur in as many as 85 percent of women in the first two weeks postpartum (O'Hara, Schlechte, Lewis & Varner, 1991). This condition which is self-limiting typically lasts only a few days and is characterized by tearfulness, mood lability and irritability (Pitt, 1973). Hormonal changes associated with childbirth likely precipitate the blues (Cox, 1986). At the other extreme, psychoses are the most serious postpartum emotional conditions. These conditions are characterized by dissociative states, delusions, hallucinations, incoherence, and disorientation, and occur at the rate of one or two per thousand births (O'Brien & Pitt, 1994; O'Hara, 1995). Most cases begin within two weeks of delivery, have high long term morbidity (Kumar & Robson, 1984), a high risk of infanticide (3%), a 70-fold increased risk of suicide in the first year postpartum and a 17-fold long term increased risk, and increased morbidity and mortality from other causes (Appleby, Mortensen & Faragher, 1998). Contemporary diagnostic practice is to identify these conditions according to the category they resemble, that is, depressive psychosis, bipolar disorder, or schizophrenia (Cox, 1986; O'Hara, 1995). A growing body of research supports the belief that physiologic changes, particularly hormone or neurohormone levels, or sensitivity to such changes, trigger this state (George & Sandler, 1988; O'Brien & Pitt, 1994).

Nonpsychotic depression is the most widely studied of the three phenomena. It is also referred to as postnatal neurosis and atypical depression. Pitt (1968) was the first to describe the condition as having an atypical presentation relative to non-postpartum depression. Postpartum depression is mild to moderate, tending to worsen in the evening with more symptoms of guilt, anxiety and psychomotor agitation compared to depression

at other times (Gennaro, 1988; Pitt, 1968). The relationship between nonpsychotic depression and postpartum blues is unclear. While all mothers who have the blues do not subsequently develop a more serious disturbance, mothers who experience more distress with the blues are more likely than other mothers to develop a psychosis or depression (Cooper, Murray, Hooper & West, 1996; Hannah, Adams, Lee, Glover, & Sandler, 1992). Early postpartum depression is reported to have negative outcomes in terms of poor psychosocial functioning and relationship difficulties that persist even after women recover from the depression (Seeley, Murray & Cooper, 1996).

Prevalence of Nonpsychotic Depression

Rates of non-psychotic depression in the postnatal period are dependent on the criteria used and the timing of the assessment. Many researchers exclude depressed postpartum women if they had previous episodes either during or prior to that pregnancy. In studies where the amount of agreement or disagreement among various scales used in identifying depressed subjects is investigated, the evidence is that the differences reflect different aspects or notions of depression (Condon & Corkindale, 1997; Senra, 1995). Estimates of the prevalence of nonpsychotic depression postnatally vary from approximately 6 percent (Harris, et al., 1996; Whiffen, 1988; Zelkowitz & Milet, 1996) to over 30 percent (Nott, 1987). Others report prevalence rates of 16 percent at six weeks (Watson, Elliott, Rugg & Brough, 1984), and 18.3 percent (Nott, 1987) and 16 percent (Kumar & Robson, 1984) at three months. Approximately 6 percent of the mothers in the latter study were also depressed during pregnancy. Subjects were predominantly upper or upper-middle class. Thus this sample of mothers may be more resilient and less likely to

be depressed than would be the case with a random community sample. Additionally, subjects were interviewed five times so there may have been supportive or therapeutic effects related to the study itself. As a result, the findings of Kumar and Robson may be underestimates of the true prevalence of depression in the population.

Nott (1987) reports a longitudinal study in which the rate of depression increased throughout the first postnatal year. The rate peaked at 9 months with new cases found throughout the 15-month duration of the study for a cumulative total of 31 percent. A rate of 28.7 percent at one year after childbirth was observed by Feggeter, Cooper and Gath (1981). In an Australian study, 15 and 10 percent of mothers who were not depressed during pregnancy were assessed as depressed at one and five months postpartum, respectively (Terry, Mayocchi & Heynes, 1996). Depression increased from 6 to 10 percent between the 6 week and the 6 month assessments in a Scandinavian study (Demjttenaer, Lenaers, Nijs & Van Assche, 1995). In a Canadian study the incidence of mood disorders at 4 to 5 weeks is comparable to rates in the female public (Gottlib, Whiffen, Mount, Milne & Cordy, 1989). Higher rates are found when assessments are done later, with 10 to 15 percent of mothers identified as depressed during the sixth to eighth month postpartum.

Impact of Depression on Mother and Family

Depressive episodes in the postpartum period may be severe, mild or subclinical. Regardless of the severity, episodes of depression are not trivial as there is substantial impairment in daily functioning (Hays, Wells, Sherbourne, Rogers & Spritzer, 1995). Mild episodes are also not necessarily shorter than more severe illness. Nearly half of the

cases persist for six months or more (McIntosh, 1993; Whiffen & Gotlib, 1993). Women who are depressed postnatally are also at increased risk for repeated episodes (Philipps & O'Hara, 1991). Evidence exists that even mild depression affects a woman's perceptions of her infant including the degree of warmth she feels toward her infant and interactions with her infant (Beck, 1996a; Cutrona, 1983). The poor quality of the mother-child relationship during the depressive episode often persists after recovery (Stein, et al., 1991).

Maternal and infant behaviours have been studied, and depressed mothers compared to healthy mothers and mothers with other emotional problems, to determine which characteristics or actions contribute to poor infant outcomes. Most studies had small samples and high attrition of depressed mothers thus the findings must be interpreted with caution (Campbell & Cohn, 1997). There is increasing evidence, however, that infants of depressed mothers are at increased risk of intellectual , social and emotional problems (Hay, 1997).

In one study, 19 school-aged children of 113 mothers with depressive disorder had a much higher risk of developing depression, to have more additional diagnoses, and to perform significantly less well academically and behaviourally that 35 control group children of 22 healthy mothers (Hammen, et al., 1987). Although this study identified serious concerns, the sample size was too small to permit generalizations, particularly considering the number and complexity of variables that were assessed. In other studies, depressed mothers rate their children as more difficult (Seeley, Murray & Cooper, 1996) and as having significantly more emotional and behavioural difficulties (Caplan, et al., 1989; Whiffen & Gotlib, 1989). Infants of depressed mothers demonstrate poor cognitive

development on tasks such as locating objects and have poor maternal-infant attachment at nine and 18 months (Murray, 1992), and at 12 and 18 months (Campbell & Cohn, 1997), and less interaction and affective sharing during structured play at three and 19 months (Stein, et al., 1997). Infants and children of mothers who have either brief or prolonged depressive episodes exhibit more behaviour problems and poorer cognitive performance as much as three to four and a half years later (Philipps & O'Hara, 1991; Wrate, Rooney, Thomas & Cox, 1985).

Factors Related to Depression in the Puerperium

Considerable controversy exists about the etiology and the extent to which biologic, psychologic and sociologic variables account for postpartum disorders. Efforts to identify variables that predict risk for developing depression postnatally have had inconsistent results. Most often personal and family history of emotional disturbance including anxiety or depressed mood during pregnancy, severe postpartum blues within two weeks after childbirth, poor social support particularly related to the marital relationship, life stress, and child care stress are identified as risk factors (Beck, 1996b; O'Hara, Neunaber, & Zekoski, 1984). Younger maternal age, lower educational attainment and unemployment (but not necessarily family income) are also associated with depression in the puerperium (Gotlib, et al., 1989). In one study, 10.3 percent of 730 Canadian postpartum women had a diagnosis of depression during pregnancy. Of this group, one third were found to have major or minor depression postpartum as well (Gotlib, Whiffen, Wallace & Mount, 1991). Neither parity nor intrapartum complications have been found to correlate with postpartum depression (Beck, 1996b; O'Hara,

Neunaber & Zekoski, 1984; Stein, et al., 1991). Women who rate themselves as having low marital satisfaction, high stress, escape-avoidance coping strategies, and more negative perceptions of the support and caring they receive have slower recovery from depression (Gotlib, et al., 1991; Laizner & Jeans, 1990).

Some evidence supports the existence of relationships between postpartum depression and corticoids, neurotransmitters, estrogen levels, and prolactin levels (Harris, Johns, et al., 1989). After the second post-partum week, hormonal studies are inconclusive or do not support a causal link to depression that is different from depression at other times (Deakin, 1988; George & Sandler, 1988; Harris, Lovett, et al., 1996; O'Brien & Pitt, 1994; O'Hara, Zekoski, Philipps & Wright, 1990). Studies that examine the link between breast feeding and/or timing of breastfeeding cessation and depression onset also have conflicting results (Cooper, Murray & Stein, 1993; Misri, Sinclair & Kuan, 1997; Stein & Cooper, 1987; Susman & Katz, 1988). Such findings are considered preliminary due to the complexity and the technical difficulty involved in hormone research.

Fatigue during the postnatal period is a pervasive problem that is "widely accepted but never clarified" (Milligan & Pugh, 1994, p. 43). Related research is difficult to interpret due to various methodological problems, but there is some evidence that fatigue is a symptom of the demands of motherhood distinct from and in addition to being a symptom of depression (Milligan & Pugh). Postpartum women generally do not experience premature/early morning wakening (terminal insomnia) which is common in depression at other times. Other types of sleep disturbance are more common, particularly difficulty falling asleep, as is physical and emotional fatigue which are implicated both as

symptoms and contributing factors related to depression (Affonso, Lovett, Paul, & Sheprak, 1990; Ball, 1987; Dalton & Holton, 1996; Gerdingen, Froberg & Wilson, 1986; Harrison & Hicks, 1983; Campbell, 1993; Hawkins & Gorvine, 1985; O'Hara, et al., 1991; Pitt, 1968).

Life stress is related to the onset or exacerbation of physical and mental illness (Holmes & Rahe, 1967). Stress accounts for 10 to 15 percent of variance in illness (Surtees, 1980) which demonstrates that given similar stressors, some people become ill while most do not (McFarlane, Norman, Streiner & Roy, 1983; Wilcox, 1981). An individual's ability to deal with significant stress, crises, or change, is dependent upon previous experience, learned coping strategies, personal characteristics and environmental factors. The extent to which life events are perceived as stressful is highly variable and correlates with the individual's locus of control and the existence of support networks (McFarlane, et al., 1983). People are particularly sensitive to environmental factors such as the influence and support of others during times of stress (Caplan, 1974). Extensive research has been done since the late 1970s to examine the nature of social support and the role it plays in relation to life stress, including the impact on mental health.

Issues Related to Interpretation of Research

Interpretation of the data on depression in the puerperium is problematic. Reasons for this difficulty include variation in the time at which the assessments are done (number of weeks or months), the method and instrument used (self-report or interview or both) and the instrument itself. Several different psychiatric interview schedules and self-report instruments have been used. The particular definition of postpartum depression is also

important. Some researchers exclude women who experienced antepartum depressive symptoms. Some include both minor and major depression while others only include cases that meet criteria for major depression. Rates are also calculated differently. Although most rates reported are prevalence rates, incidence is also reported.

The Beck Depression Inventory (BDI) is among the four instruments most frequently used in clinical practice (Piotrowski, 1996). It has been used in general and special population studies including postpartum women, and the psychometric properties are known (Cutrona, 1983; Demjttenaere, et al., 1995; Gotlib, Whiffen, Mount, et al., 1989). Concerns have been raised regarding the use of this instrument in the postpartum period because the clinical presentation of depression in postpartum women is frequently a mixed presentation of anxiety and depression and because of confusion around sleep, appetite and weight changes during the puerperium (Affonso, Lovett, Paul & Sheptak, 1990; Cox, 1986). There is some evidence that the BDI underestimates the presence of depression in the puerperium, missing nearly one third of the cases of major depression in one study (Harris, Huckle, Thomas, Johns & Fung, 1989). The Edinburgh Postnatal Depression Scale was specifically designed to screen for postpartum depression in the community. It has been widely used in the last decade, particularly in Europe and Australia and is in use in a few community health nursing programs in Alberta (personal communication, C. Harlan, August 15, 1997; personal communication, D. Shaw, August 13, 1997).

In a comparison of the BDI and the EPDS in a sample of 276 postpartum mothers at two and six months there was a high correlation between total score but low concordance on analysis of response patterns (Lussier, David, Saucier & Borgeat, 1996).

The authors suggest that the distinct response pattern in different subgroups is attributable to the instruments tapping various aspects of the presentation of postnatal depression.

Despite difficulties in comparing data, there is a growing body of evidence that except for the increased presence of anxiety symptoms, depression in the postpartum period is not different from depression that occurs at other times (Stowe & Nemeroff, 1995). The postpartum period is a time of increased vulnerability because of the stress inherent in pregnancy, childbirth, caring for a newborn, and changes in family relationships (Nott, 1987; O'Hara, et al., 1991; Whiffen & Gotlib, 1993). There are likely a number of biologic, psychologic and sociologic antecedent factors that trigger or contribute to the risk for developing depression (Thurtle, 1995).

Social Support

Social supports influence how well people cope with stress and life events (McColl, Lei, & Skinner, 1995; Thoits, 1986). Support networks are the social structures of interpersonal relationships through which social support is provided. Social networks exert strong influences on the beliefs and practices of individuals in a society (House, Umbertson & Landis, 1988; Stewart, 1989). The influences can be positive or negative. Networks serve an important protective function when members provide emotional support and task-oriented assistance to each other (Caplan, 1974). These interpersonal interactions have been classified as emotional, informational or guidance, and practical or tangible (instrumental) aid and appraisal (Langford, Bowsher, Maloney & Lillis, 1997; McColl, et al., 1995). Social support refers to social bonds and supportive actions that exist between and among members of a social network. Comfort and help can be

provided through formal or informal contacts with individuals or groups (Wallston, Alagna, DeVellis & DeVellis, 1983). A positive social climate exists when a person perceives that these social supports are available (Moos & Lemke, 1992) and feels loved, valued, secure, and helped when needed (Sarason, Shearin, Pierce & Sarason, 1987). Conflicts in family and social relationships occur when some members are over involved or when interactions are perceived to be critical or unhelpful (Coyne & DeLongis, 1986; House, Landis & Umbertson, 1988; Stewart, 1989). Such relationships create a negative social climate, interfere with healthy coping and are a significant source of stress. Social networks or systems tend to have enduring patterns of relationships (Caplan, 1974).

Theories of Social Support

Empirical evidence supports the contention that social support has beneficial effects for people (Stewart, 1993; Vilhjalmsson, 1993). Two different theories are posited in the literature to explain the mechanism by which social support creates positive effects. The first theory is that support buffers stress, that is, it has a modifying effect in the face of ongoing difficulties and stressful life events (Jackson, 1992; Wilcox, 1981). The second theory is that social support provides a general beneficial effect and partial resistance to stress, and has a direct impact on wellbeing (Cohen & Wills, 1985).

Properties of Social Support

Social support can be described according to structural and functional properties (Flannery & Weiman, 1989). Frequency of contact, stability, size, density, and accessibility of a person's network of family and friends are structural properties.

Functional properties are type, amount, sources and adequacy of support (Thoits, 1982). Sources of support include spouse or partner, parent, other kin, co-workers, friends, members of community groups, teachers, clergy, counsellors, and health professionals. One's perception of the actions, behaviours and communication of significant others is key as social support relates to the individual's satisfaction with the extent to which belonging, approval and security needs are met (Sarason, et al., 1987).

Effect on Individuals

Existence of supportive relationships is critical to successful coping with stressful life events (Mishel & Braden, 1987; Thoits, 1995). Women who perceive that they have adequate spousal support are at lower risk for psychological distress and depression than women who do not experience such support (Beck, 1996b; McIntosh, 1993; O'Hara, 1986; Vilhjalmsson, 1993; Whiffen & Gotlib, 1993; Zelkowitz & Milet, 1996). A close, positive relationship with an intimate partner is generally found to be the most important aspect of the social network for postpartum women (Beck, 1996b). Presence of a confiding relationship protects against depression (Hall, Kotch, Brown & Rayens, 1996; Stein, Cooper, Campbell, Day & Altham, 1989). Other family, work, and community friendships are beneficial through provision of appraisal and emotional as well as tangible support (Hall, Gurly, Sachs & Krysio, 1991; Paykel, Emms, Fletcher & Rassaby, 1980; Syrotiuk & D'Arcy, 1984). When support that is expected or hoped for from a woman's husband and mother is not forthcoming, particularly in the postpartum period, self-esteem is negatively affected and stress is increased (McIntosh, 1993).

Instrumental and informational supports are reported to be of primary importance

for individuals who are recovering from serious health problems (McColl, et al., 1995). Informational support is defined as that information provided to another during times of stress (Krause, 1986). In some cases these needs are more effectively addressed by organized supports such as peer or mutual aid groups (Caplan, 1974). Formal caregivers provide such services as counselling, information, or psycho education (O'Brien, 1980). Norbeck (1988) refers to this type of social support which can be either ongoing or temporary, as surrogate support. Such support is reported to be effective for particularly high risk mothers (Barnard, Snyder & Spietz, 1984).

Social Support and Adaptation to the Maternal Role

There needs to be a match between the type and sources of support, the type of life strain, and the recipient's needs in order for the support to be perceived as helpful (House, 1981; Jackson, 1992). Day to day help, encouragement, and emotional support by the partners of postpartum women are of primary importance. Presence of such support is correlated with lower levels of maternal stress and more positive mother-infant relationships (Crnic, Greensberg, Robinson & Raisin, 1984). As the husband may have no more knowledge or skill regarding infant care and parenting than his wife, informational and instrumental support are needed from experienced family, friends, and formal caregivers such as nurses (Gray, 1991). Community sources of support serve a protective function, particularly for women who have low spousal support (Syrotiuk & D'Arcy, 1984). Single women may seek emotional and tangible support from others (Reis, 1988).

Functional social support during pregnancy and the puerperium and opportunities

to share experiences are important factors in the emotional well-being of the mother (Brown, 1986). Most mothers resolve uncertainty about what is best for themselves and their babies by the end of the first postpartum month but not necessarily appropriately or safely (Norr & Nacion, 1987). Role functioning is the ability of a person to carry out activities typical for a particular age and social role. Role adaptation, acquisition of knowledge, self confidence, and self esteem are enhanced when the mother receives support from a credible person (Lemmer, 1987; Rubin, 1967).

Marital satisfaction has been shown to be positively correlated with maternal role adaptation. Women who experience "role conflict in relation to their spouse or parent" (Majewski, 1986, p. 13), regardless of age, parity, education and socioeconomic status, have greater difficulty with transition to the maternal role. Marital conflict, depressed mood during pregnancy, and perceived lack of spousal support are reported to be predictors of the development of depression following childbirth (Cutrona, 1983; Demjttenaere, et al., 1995; Gotlib, et al., 1989). In a large study of rural and urban postpartum women in Britain a significant relationship was found between postnatal depression and marital tension or disturbance at home (Ball, 1987). Perceived lack of tangible support and emotional support are reported by Norbeck (1981) to be significant predictors of postpartum depression.

Problems Related to Measurement of Social Support

Many instruments have been devised to examine social support. Most are single-use tools designed for a specific population. Due to the fact that these tools are developed according to different theoretical perspectives, considerable variation exists in the aspects

and nature of the support measured (Doeglas, et al., 1996). Beck (1996b) reports that in 15 studies in which the relationship was investigated between social support and postpartum depression, 12 different instruments were used. Psychometric properties of these instruments are seldom reported (Heitzman & Kaplan, 1988; Norbeck, 1988; Stewart, 1989, 1993; Winemiller, Mitchell, Sutliff & Cline, 1993).

Complexity and diversity are inherent in the construct of social support. It is not realistic in terms of response burden and costs to measure all possible dimensions of the construct (Stewart, 1989). Instruments are classified on a continuum from situation specific to global. Situation specific instruments are those that apply to groups of subjects facing common stressors and involve perceptions of and satisfaction with support in a certain period (Stewart, 1989). Norbeck (1985) recommends use of situation specific measures in nursing research because of the clinical focus.

Summary

Depression is a mental health problem that is common but typically under-recognized in the community, including in postpartum women. Postpartum mothers may have a mixed presentation of anxiety and depressive symptoms. In the puerperium, mothers may have difficulty distinguishing somatic symptoms of depression, particularly weight change and fatigue, from changes related to involution and demands of infant care, similar to the difficlties experienced by patients with chronic or severe medical problems like cardiac disease (Davis & Jensen, 1988).

Postpartum studies show equivocal evidence of relationships between characteristics such as socioeconomic status and age to episodes of depression in the

postpartum period. There is no clear evidence to predict whether the prevalence of depression among postpartum women in rural Alberta is similar to rates reported in urban settings. These women may be less likely to seek treatment than their urban counterparts. Early detection in postpartum mothers by nurses and other health professionals and appropriate followup may prevent serious adverse effects for women and their family members. Community studies to obtain prevalence estimates provide data that may assist in case finding (Nott, 1987).

Empirical evidence supports the hypothesis that there is a negative correlation between social support and depression, specifically that positive informal support systems reduce the risk of depression. There is some evidence of differences in sources of stress and level of support between rural and urban women but further study is needed. It is important to obtain a measure of the support that these rural mothers perceive is available to them.

Few valid and reliable instruments have been developed to assess social support. No tool was found that has been developed or used specifically with postpartum mothers. As the Norbeck Social Support Questionnaire has been used in studies of pregnant mothers and mothers with young children and its psychometric properties are documented, it was selected for this study.

No concensus exists among researchers regarding the most appropriate screening instrument for depression. The Beck Depression Inventory is one instrument that is recommended for use both for screening and diagnosis in community and special populations and has been widely used for more than two decades including with postpartum populations. However, the above concerns regarding the difficulty postpartum

women have differentiating somatic symptoms from what they feel is related to involution and the stress of infant care led Cox and associates to develop the Edinburgh Postnatal Depression Scale in the 1980s. Use of this nascent instrument is increasingly reported in Britain, Europe and Australia with this special population. Both the Edinburgh Postnatal Depression Scale and the Beck Depression Inventory were selected to assess risk of depression in the mothers in this study.

A focus group was determined to be the best method by which to pretest the survey package, explore the acceptability of the timing at eight weeks postpartum, examine the response burden, and assess the feasibility of asking mothers to respond to two similar instruments about depression. The development of the focus group and the results are described in Chapter 4.

CHAPTER 3

METHODS

The purpose of this chapter is to describe the study methods. The study design is described followed by a description of the population, subject selection, procedures, data collection, ethical considerations and data analysis.

Research Design

A descriptive correlational survey design utilizing data from two structured screening instruments was used in this study. Cross-sectional data were obtained to determine the prevalence of risk of depression and to determine relationships among variables. The depression scale is scored as one scale to assess risk/low risk. Social support has a total scale score and three sub-scales. Two additional subscales were calculated for individual sources of support. Depression score, social support scores, demographic and personal characteristics of the mothers and the birth were studied (i.e., age, parity, family income, educational, occupational and marital status, living location, distance from various sources of health care, type of delivery, location of birth, personal history of depression, method of infant feeding and infant gender).

Setting

The study was conducted in a regional health authority area which is predominantly rural. A population of approximately 100,000 is dispersed over a large geographic area. All of the towns have populations under 8,000. Part of the area borders on urban centres. There were approximately 1000 live births in this RHA in 1993-1994

and 1089 in 1996-1997, 87 of which were to teenage mothers (K. Deis, personal communication, September 29, 1997); approximately 90 live births per month. Of these, 75 percent were estimated to be to mothers living more than 50 kilometres from an urban centre.

Sample Selection

The target population is adult women in rural settings who have live births and who are approximately eight weeks postpartum. The cohort consisted of 203 eligible mothers referred to the public health nursing program in the rural areas of the RHA during a three month period. Multiparae and primiparae were included, vaginal and caesarian section and multiple as well as single births. Mothers younger than 18 years of age and mothers living within a 50 kilometre radius of urban centres were excluded from the study. All respondents were able to read and write English. To obtain as heterogeneous a sample as possible the participants were drawn from all of the rural communities in the area.

Data Collection Instruments

Two structured screening instruments were used, the Edinburgh Postnatal Depression Scale (EPDS) and the Norbeck Social Support Questionnaire (NSSQ). Demographic and biographic data were collected from the health record at the RHA and from the mothers.

The Edinburgh Postnatal Depression Scale

The EPDS is a 10-item self-report instrument developed for use in clinical practice and research with postpartum women in the community (Cox, 1986; Cox, Holden & Sagovsky, 1987). The purpose of this tool is to screen for depression or risk for depression and although it is not intended to be diagnostic in the sense that it does not substitute for a psychiatric assessment, it "clearly defines a population which needs further evaluation" (Holden, 1994, p. 126). The instrument takes five minutes or less to complete (Appendix A). Mothers are asked to indicate the scale descriptors that best describe how they felt in the previous week. Normal response scores are 0 and severe response scores are 3 so that total scale scores may range from 0 to 30. Each item of the scale has a question that refers to a specific manifestation of depression (eight items) or anxiety (2 items). Four possible response statements are graded from 0 to 3 "according to the severity and duration of the symptom" (Cox, 1994, p. 119). Three of the items are structured so that the response is graded with 0 as the severity of the first option. Seven questions are rated in the reverse order. Symptoms included are mood, pessimism, irrational feelings of guilt or self-reproach, sleep disturbance, crying spells, thoughts of self-harm, apathy or lack of satisfaction, feelings of inadequacy (inability to cope), excessive worry and feelings of panic. The sleep item is worded in such a way that the mother can distinguish a disturbed sleep routine as a result of caring for the infant from disturbance due to emotional distress.

The original 13-item scale from which this tool is adapted was developed by a panel of mental health experts working with postpartum women in the community and their health workers, and in outpatient departments of hospitals (Cox, et al., 1987).

Questions were derived from analysis of the literature and other rating scales for anxiety and depression, and a process of many interviews with postpartum mothers. The initial study to test the 10-item EPDS involved 84 primiparous and multiparous women in a community sample who had normal vaginal, forceps assisted, or Caesarian section births. The authors state that the scale has face validity as it is well accepted by mothers (Cox, 1986). In a community sample of 674 mothers who were mailed the instrument at six weeks postpartum, there was a 97.3 per cent response rate (Murray & Carrothers, 1990). Internal consistency was established with all correlations shown to be significant, "most of them ranging between 0.6 and 0.8" (Cox, 1986, p.81). Split-half reliability of the scale was 0.88 (Cox). The standardized alpha-coefficient was 0.87. Mean scores are reported in only one study and only for the portion of women who were depressed (Cox, et al., 1987). The mean score at 6 weeks postpartum was 16.5; however, as this sample was recruited from women thought by health visitors to possibly be depressed, the authors state that the sample was not representative of what would be observed in the community (Cox, 1994). Test retest reliability was established; although there was a change in the mean scores there were no significant differences between mean scores of repeat measures 11 weeks apart, but statistical data are not reported (Cox, et al.).

Validity testing was done by having two trained interviewers blind to the mothers' EPDS scores assess the women on the same day that the scales were completed, in their homes. The interviewers used the Goldberg Standardized Psychiatric (SPI) interview schedule and based their diagnoses on research diagnostic criteria for depression. With a cut off score of 12/13, the EPDS correctly identified 83 percent of women diagnosed with depression. All of the women with scores above the cut off who were not diagnosed with

depression were given psychiatric diagnoses other than depression. When a cut off score of 9/10 was used, 90% of diagnosed cases of depression were identified by the EPDS. Cooper and associates (1996) assessed 1629 mothers who scored nine or greater on the EPDS. Based on in-home clinical interviews conducted using the structured interview for DSM-III-R, 81.3 percent of these mothers were diagnosed with major depressive disorder.

Evidence of construct validity is reported by Harris and associates (1989) in a study of 3038 mothers at six to eight weeks postpartum. Mothers who had vaginal and Caesarian births were assessed using the EPDS and three other depression self-report rating scales. Correlations ($p < .001$) are reported between the EPDS and the BDI, the Raskin, and the Montgomery-Asberg scales as 0.68, 0.80, and 0.79 respectively. Two psychiatrists blind to the rating scale scores conducted psychiatric assessment interviews using the DSM-III criteria for major depression. The EPDS correctly identified 95% of subjects who were diagnosed as depressed by clinical assessment. Correlation data are not reported. Based on the cutoff scores of 11 and 10, sensitivity is reported as 95 percent, specificity as 93 and 82 percent. These values were equivalent to observer rated scales and better than the BDI. Zelkowitz and Milet (1996), whose study was done at approximately eight weeks postpartum, also interviewed subjects using the Goldberg Standardized Psychiatric Interview. They report sensitivity of the EPDS as 91 percent using a cutoff score of 9\10. Correlation data are not reported.

A cutoff score of 10 was used in this study to minimize the possibility of false negatives. Scores of 9 and less were rated as low risk for depression. Scores of 10 to 13 were rated as moderate risk and scores of 14 and over were rated as high risk. If a mother

scored on item 10 (suicidal thought) and the overall score was 9 or less, although on clinical assessment she might be found to be depressed or considered at risk, for this study the rating was left as low risk. The EPDS was used with permission (Appendix B).

The Beck Depression Inventory

The Beck Depression Inventory is a 21-item instrument to detect depression which is used both as a diagnostic and a screening tool. Each question consists of four statements rated on a four point scale from 0 to 3. Respondents are asked to circle the number next to the statement that best describes how they felt during the previous week. For example, in one question the first statement, rated 0, is "I do not feel like a failure" and the fourth statement, rated 3, is "I feel I am a complete failure as a person" (Beck, 1978). Total score is a combination of the number and severity of symptoms, ranging from 0 to 63. Scores of 0 to 9 are considered normal or asymptomatic. A score of 10 or above is considered to indicate risk of depression thus 10 is recommended by the developers as the cutoff when the instrument is used for screening purposes in community samples. This minimizes false negatives and detects the maximum number of potentially depressed individuals. The BDI can be self-administered and requires approximately five minutes to complete.

Internal consistency and validity of the BDI are documented in populations aged 17 to 80 years. Test-retest stability is reported as ranging from 0.79 to 0.93 across samples (Beck, 1972; Beck, Ward, Mendelson, Mock & Erbaugh, 1961). In a study of psychiatric outpatients, the conclusion was that the 21 items are positively correlated with self-reported depression. The coefficient alpha for the total scale was 0.89 (Beck, Steer,

Ball & Ranieri, 1996). Concurrent validity is documented in numerous studies in which the BDI was administered with anxiety, locus of control, self-concept, other self-rating depression scales and psychiatric interviews. Factor analysis in some studies shows that the various scales emphasize different dimensions of depression or discriminate depression severity differently, but the BDI continues to correlate with other measures (Brown, Schulberg, Herbert & Madonia, 1995; Robinson & Kelley, 1996; Santor, Zuroff, Ramsay, Cervantes, et al., 1995). The BDI was used in the focus group but not the survey.

The Norbeck Social Support Questionnaire (NSSQ)

The NSSQ was the instrument used to assess the availability, size, and stability of the mothers' social support networks, emotional and appraisal support, and the tangible or instrumental aid dimensions of the mothers' social network. This is a nine-question, self-administered questionnaire that can be completed in approximately ten minutes. A sample page of the tool is shown in Figure 1. There is a total functional scale score (6 emotional support and aid questions) and four subscales. Emotional support is comprised of affect/affirmation (4 questions). Aid refers to tangible support (2 questions). Network properties includes the number in list and the duration and frequency of contacts (2 questions). Loss is described by a yes/no question, the number lost by category and a rating of the amount of loss (3 questions). Additional subscale scores may be obtained by summing the scores separately for the sources of support.

The mother is asked to identify as many significant persons in her life as she wishes and their relationship to her such as spouse or partner, other relative, friend,

colleague or health care provider (space for 24 names with instructions how to add more). In questions one to six the mother is asked to rate how much each person makes her feel loved, respected or admired, how much she can confide in that person, how much that person agrees with or supports her actions, and how much the person could or does provide her with tangible aid. Ratings are on a five-point scale from 0, "not at all" to 4, "a great deal". Question seven asks the mother to rate the duration of her relationship with each support person named from 1 (less than six months) to 5 (more than five years). Question eight asks about the frequency and mode of contact with the network members (e.g. face-to-face, telephone). Ratings are from 5 (daily) to 1 (once a year or less). The last question, in three parts, asks about the loss of support persons by category (e.g. partner, relative, neighbour) as a consequence of moving, death, separation or loss of employment during the previous year, and the amount of support they provided that is no longer available.

The NSSQ was developed using a population of young adult university students (Norbeck, Lindsey & Carrieri, 1981). Reliability was assessed by administering the NSSQ to subjects twice within a one week interval. Test-retest correlations of the subscale items were: affect/affirmation, 0.87 to 0.89; aid, 0.85 to 0.87; and network properties, 0.90 to 0.92. Testing for concurrent validity was done by administering the Social Support Questionnaire (SSQ) developed by Cohen and Lazarus to one group of respondents. The authors state that although subscales of the two instruments are defined somewhat differently, significant correlations were found. Emotional support (SSQ) was correlated with the functional subscales of the NSSQ (0.44 to 0.56, $p < .001$). Aid and total network scales (NSSQ) correlated significantly with informational support (SSQ),

0.31 ($p < .05$). Response bias was assessed by administering the Marlowe-Crowe Test of Social Desirability. Correlations between the desirability measure and the NSSQ items ranged from 0.01 to 0.17. Construct validity was supported as mood state scores on the Profile of Mood States for depression and confusion were significantly correlated with total loss (0.24 and 0.26). The NSSQ has been used with pregnant women (Norbeck & Tilden, 1983), mothers with and without male partners (Norbeck & Sheiner, 1982) and mothers with young families in a variety of socioeconomic settings (Norbeck & Anderson, 1989; Norbeck & Tilden).

Figure 1. Sample Page from the Norbeck Social Support Questionnaire

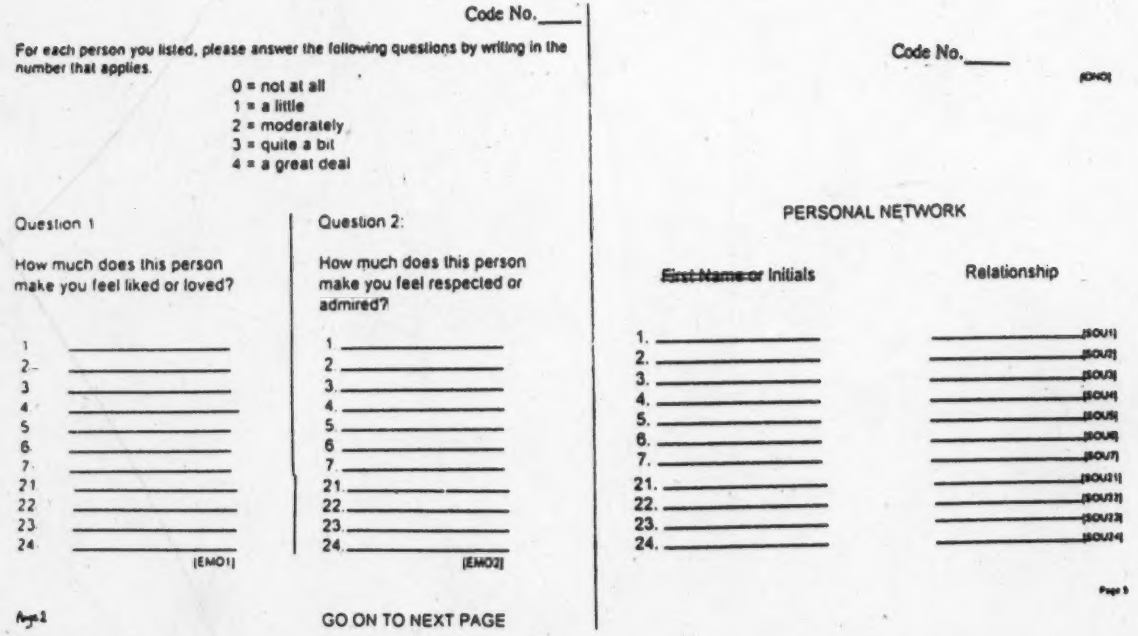

Figure 1. The NSSQ is a six-page instrument. The first four pages are half pages on the left side that align with the list of names of members in the personal support network on the right. The scoring key is at the top of each page and respondents rate each network member for each question. The questions about network losses are on the last page (Norbeck, 1995; used with permission, Appendix C).

The Health Record Summary Sheet

Health record data were collected by the RHA from the notice of birth for all women residing in rural areas in the RHA who had live births during the data collection period. A summary sheet was developed for the purpose (see Appendix D). Information includes maternal age, marital status, date and location of the birth, type of delivery, gender of the infant and gravidity.

The Mother's Personal Information Sheet

Personal information not available in the RHA records was collected by a questionnaire designed by the researcher (Appendix E). Questions were asked about living location, education, occupational status, family income, cultural background, method of infant feeding, and previous personal history of depression. Items about the mother's history of depression are based on DSM-IV criteria. Mothers may attribute such symptoms as fatigue and emotional lability or irritability to pregnancy. Therefore they were asked to respond to separate questions about symptoms during pregnancy and symptoms at other times (questions 11 and 12).

Mothers were encouraged to add narrative comments in more detail than the questionnaires allowed. Concerns raised about the EPDS are that it is not a complete list of depressive symptomatology and that mothers do not have the "opportunity to describe their symptoms fully" (Beck, 1995, p. 310). Ball (1994) reports that many women in her study used such an opportunity to expand on their responses. The chance to comment was also intended to convey that the mothers' personal views and feelings are important.

Data Collection Procedures

A two-step process of communication was established with the RHA. First, permission was obtained from senior officials to conduct the research within their organization (Appendix F). The study purpose and design were explained to supervisors and public health and mental health staff to gain their interest and support. This was particularly important as mothers who may have identified themselves as having concerns regarding their mental health, were advised to contact public health nurses, mental health personnel and their physicians. Although the nurses were asked not to discuss the study in detail with mothers, they and the other health care providers needed sufficient information to understand the purpose and procedures of the study so that they could respond appropriately to questions and refer mothers to the researcher for more information.

A complete sample of the survey package was distributed to each public health nurse and data collection procedures were reviewed with staff immediately preceding commencement of data collection. Nurses and other RHA personnel were asked to identify concerns with communication and data collection procedures at any stage and revisions were made as needed.

After ethics approval was obtained (Appendix G) and prior to sending information to the mothers, a letter was sent from the Medical Officer of Health (MOH) of the RHA to all physicians in the area advising them about the study. Physicians were sent copies of the information letter that was in the mothers' survey package which included the name and telephone number of the researcher so that they also had the opportunity to ask questions.

Notification of the Mothers and Distribution of the Survey

The original plan agreed to with the RHA was that at the time of the initial postpartum contact the public health nurses would give each new mother a brief explanation about the survey, either in person or by telephone. The method was expected to vary as a few mothers decline postpartum visits. Mothers would either be mailed or hand delivered the letter from the MOH (Appendix H). They would be told that at about seven weeks postpartum they would receive in the mail a package containing the questionnaires.

When the study commenced, the decision was made to expedite data collection by including in the study mothers who had delivered infants during the previous month. The letter of introduction from the MOH was mailed to these mothers as the nurses had already done their postpartum visits. This revised method proved to be efficient and at the request of the RHA, all of the mothers were informed in this manner. The nurses preferred this approach as they were uncomfortable with the plan for them to provide the survey introduction while not being able to discuss concerns the mothers might express. The staff person responsible for mailing felt that with this method it was possible to control the timing so that all the information was received by the mothers at the same interval. Mothers then received the survey separately from their contact with the nurse when their attention was focused on more urgent concerns, and the letter did not get 'lost' in the larger set of postpartum information routinely delivered by the nurses. Additionally, the administrative person was able to ensure that only eligible mothers were sent the survey information. This was economical and avoided asking mothers to respond whose information would be excluded from analysis because of their living location.

Because of the need to ensure the confidentiality of the subjects, the procedure for distributing the information and ensuring that RHA staff did not learn who did or did not participate in the study was emphasized. A numeric coding system was used to match the health record information to the questionnaires. Each live birth was assigned a code number in order of enrollment. Health record information of all rural mothers who had live births during the study period was transcribed by designated RHA staff onto a form with the code number. A master mailing list with code numbers that was not accessible to the researcher was kept by the RHA. The researcher provided the RHA with pre-coded, pre-stamped survey packages. RHA personnel addressed and mailed the packages to eligible mothers at approximately six weeks postpartum.

Survey Packages

Based on the suggestion of the focus group members a logo was devised and included with the introduction from the MOH and added to the return address label so that the mothers could easily identify the envelope as containing the postpartum survey. Each package included a personally signed letter from the investigator describing the study and her credentials (Appendix I), two copies of the consent form (Appendix J), the survey instruments, resource information and a concluding note thanking mothers for participating. In the thankyou note the mothers who had concerns, were feeling depressed, and who had an EPDS score indicating risk of depression were advised to seek professional help (Appendix K). A single tea bag of herbal tea was included in each package to encourage the mothers to respond and in exchange for the time it would take to fill out the instruments. Mothers were asked to sign and date a copy of the consent

form and mail it to the researcher as soon as possible with the questionnaires in the stamped return envelope provided. A reminder sticker to help ensure that all these items were sent was placed under the flap on the return envelopes naming the four items to be returned. The RHA staff person who labelled the survey packages inserted the appropriate resource information sheet based on the mailing address of the mother. A postcard-style request for contact card that the mothers could send to the RHA (Public Health and/or Mental Health Services) was included. The information sheet, one copy of the consent form, and the resource information could be retained by the mothers. Followup notices provided by the researcher to the RHA were mailed to mothers two to four weeks after the survey packages were sent, to increase the response rate (Appendix L).

Timing of the Study

Eight weeks postpartum was selected as the timing for completion of the questionnaires as differences in infant development that might affect maternal well-being are less pronounced and the mother's physiologic recovery occurs to a great extent by this time. Although only half of mothers regain physical energy by six weeks, the differences in functional status existing in the first weeks postpartum between mothers who delivered vaginally and those who delivered by Caesarian section are no longer present (Fawcett, Tulman & Myers, 1988). During this interval many women will have made considerable recovery and begun to resume more usual schedules. Fatigue of childbirth is not reported by mothers after three weeks. Although most mothers report fatigue at six weeks they attribute it to the care giving demands of their infant (Hantos, 1993).

New cases of depression have been found to peak about three months after

childbirth and to develop for a year or more after delivery. Maternal role adaptation also continues throughout the year following the birth and possibly longer (Mercer, 1985). Nevertheless, some women report resumption of family and occupational activities when the infant is a month to two months old. Six percent of women in one study had resumed employment by one month and 58 percent had done so by three months (Gjerdinger & Chaloner, 1994). Women perceive a substantial decline in both emotional and practical support after the first month.

The timing of eight weeks was believed to be a balance that would optimize response rate. The EPDS has been frequently used at the eight-week interval. The authors of the EPDS recommend that the tool be administered at three intervals in order to detect cases that develop later. The first completion time is recommended as five to eight weeks after childbirth (Holden, 1994). The appropriateness of the timing was confirmed by the participants of the focus group. Two of the women who were contacted by the researcher but did not participate in the focus group were unable to do so because of workplace related commitments. All of the mothers who attended agreed that 7/8 weeks was "about right" as by then mothers have had a chance to "get used to" their newborn, and most of the tide of postpartum visitors and helpers has "subsided".

Protection of Human Subjects

The Health Research Ethics Administration Board and the RHA approved the focus group that was conducted prior to final approval of the proposal (Appendix M) and approved the study prior to data collection. All written information for the study participants was confirmed to be between grade four and eight reading levels using the

Grammatik feature of WordPerfect TM.

No direct benefits or risks were expected for participants in the study, although it is possible that responding to the survey could evoke an emotional response and/or cause some of the mothers to believe they are or may be depressed or lacking support. It was important that if a woman identified such feelings or had other related concerns, that she obtain help. Therefore a copy of the scoring sheet for the EPDS was included with a statement at the bottom to retain it for their own reference, so that the mothers could rate their responses. The women were also advised that if they scored above 0 on the question about thoughts of self harm they should contact a health professional immediately. Women were encouraged to communicate any health needs and concerns they might have at the time of the survey or later to their physician, public health nurse and/or mental health worker, particularly if their EPDS score was 12 or more. This latter caution was based on the recommendation of the developer (Holden, 1994). The experience in a public health screening program in Edmonton in which the EPDS was used was that mothers with scores of 12 or less were reluctant to accept intervention (A. Akgungor, personal communication, September 17, 1997). Ultimately, if survey results of any of the women had suggested exigent life threatening risk such as active suicidal intent, the code could have been broken to act to prevent foreseeable imminent harm and protect the participant.

Information about regional mental health and public health resources was given about the particular areas where the survey took place. Women were also given the option to request that they be sent summary information at the conclusion of the study. Feedback request forms were structured so that they could be mailed separately from the

questionnaires, giving the mothers the option of maintaining anonymity. Several of these forms were returned with the survey. They were kept locked separately from other documents during the study and returned to the mothers with the results.

Confidentiality of subjects was maintained during the study as the researcher had no access to the names and addresses on the master list compiled by the RHA, and only the researcher had access to the information in the signed consent forms and the raw data. A coding system was used to ensure anonymity on all questionnaires, health record and information sheets. RHA personnel contacted mothers regarding the focus group and obtained verbal consent for the researcher to contact them but had no access to any personal information about the mothers who subsequently took part. Privacy of names and other identifying information about the focus group and study respondents is protected as the participant consent forms will be kept in a locked file, separate from other study records and accessible only by the researcher, for at least the seven year period specified by the Ethics Board and then destroyed. The lists kept by the RHA for health record data and mailing were destroyed by RHA staff at the conclusion of the study. Mothers were informed that no RHA personnel would know who had participated in the study, that their decision to participate in or abstain from the study would not affect their future care and that all reports, publications and presentations of findings will protect their privacy.

Data Analysis

Statistical analyses of the quantitative data were conducted using the Statistical Package for the Social Sciences (SPSS TM for Windows) and Stata (StataCorp, 1997).

All data entries were double checked against the raw data to ensure accuracy. Scoring of the NSSQ to calculate total scale and subscale scores and scores for specific sources of support was according to the 1995 instructions (Norbeck, 1995). Frequency distribution tables were used to present demographic variables. Analysis of differences between mothers who participated in the survey and non-participants was done using t-tests for independent samples and chi-square analysis (Daniel, 1995).

Descriptive statistics were compiled for all variables. Measures of central tendency and variability were calculated for continuous data of maternal age, education, travel time from health providers and EPDS and NSSQ scores. The EPDS score is reported as a dichotomous variable (below 10/10 and above) and the proportion of women at risk for depression is estimated. This score is also classed as low, (9 and under), moderate (10 to 13) or high (14 and over) risk. Tests of association were conducted between variables for mothers who were rated at risk compared to mothers who were at low risk.

Independent samples t-tests, chi-square analysis and correlation analysis were used to assess relationships between depression scores, depression risk and other variates (Daniel, 1995). Regression analysis was performed to investigate the nature of the relationships that exist between independent variables and the dichotomous dependent variable of depression risk/low risk. Logistic regression analysis was used to model the probability that a mother is at risk of depression based on the existence of variates suspected of being predisposing factors and the odds ratio was calculated for each variate (Daniel). This statistic is a measure of how much greater or lesser the probability is of a mother scoring 10 or more on the EPDS based on her score on each independent variable.

Ninety-five percent confidence intervals were constructed for the odds ratios. Stepwise regression was used to analyze multiple independent variables. History and feeding method were entered as dichotomous variables and partner support was entered as a polytomous variable. Pearson chi-square goodness-of-fit tests were computed to assess the effect of covariate patterns on the regression model (Hosmer & Lemeshow, 1989).

Unstructured data were compiled and content analysis performed using the manifest method of content analysis (Field & Morse, 1985). Data were reviewed to identify key descriptors, words, terms or phrases, and themes. For the purpose of establishing reliability, a second person knowledgeable about content analysis reviewed a sample of the data. Content categories were developed based on the descriptors. Data were coded according to the categories and presented in descriptive summaries including comparisons to the depression scores of the subjects.

CHAPTER 4

THE FOCUS GROUP

The design of the focus group is described in this chapter. Results of the group interview are described and recommendations presented. A description of the revisions to the instruments and the survey package that were incorporated as a result of the interview concludes the chapter.

Focus group interviews are used in social and health sciences research for a variety of purposes such as generating hypotheses, developing and testing educational and research materials and interpreting research results (Morgan, 1988). Focus groups can be conducted as the sole means of data collection or in combination with other qualitative or quantitative methods. Such group discussions prior to quantitative studies can help the researcher learn the vocabulary, thinking patterns and concerns of the target population. Using this information, the researcher can develop or revise instruments and procedures to better meet the needs of the intended audience.

Pre-testing of the postpartum survey package for the study was done by means of a focus group interview following the method outlined by Krueger (1994). The intent was to gain insight into the attitudes and opinions of mothers similar to the mothers who would be in the study. Specific purposes of the discussion were to determine the amount of time required to complete the questionnaires and whether the questions were easy to understand and answer. In particular, views of the mothers were solicited about including two instruments to screen for depression. Feedback was requested about the timing, content, format, instructions and anything pertinent to the study that might affect acceptability and response rate.

Focus Groups for Research Purposes

A focus group as defined by Morgan (1988) is a special type of small group interview that relies on interaction among the members to elicit insights that may be less accessible without a sharing of ideas. Focus groups for research purposes are semi-structured, moderated and held in informal social settings to promote candor and stimulate ideas on a designated topic. Discussion follows a plan designed explicitly to obtain perceptions and points of view on a particular issue. Interaction in a group facilitates rich description but only if the group is structured and managed in a way that minimizes psychological situations that commonly occur within groups. One such situation is 'groupthink', a phenomenon whereby members tend to conform to the majority opinion (Carey & Smith, 1994). Group composition, environment, moderator, the nature of the questions and the structure and sequence of the questions in the discussion are critical aspects of conducting effective focus groups (Kingry, Tiedje & Friedman, 1990). Method and level of analysis are selected according to the study purpose.

Focus Group Composition and Structure

Small homogeneous groups of four to ten people are recommended for focus groups to provide everyone the opportunity to participate and still have enough people to obtain a range of responses (Krueger, 1994). Participants should be similar to each other on characteristics related to the purpose of the study or discussion. If possible, the participants should not previously be familiar with one another. This is because people tend to disclose to strangers more personal opinions especially if the strangers appear

similar to themselves on one or more characteristics. Most people will more often express different or contrary views in focus groups if they do not know each other or do not interact regularly in social or employment groups (Krueger, 1994). Those recruited are more likely to attend if the topic builds on an existing interest or relationship and if the location and time are convenient. Some authors recommend offering incentives such as gifts, monetary stipends or reimbursement for expenses.

Setting for A Focus Group

Environmental factors to consider for focus group comfort are that the group be held in a non-distracting setting and in a neutral location that is non-threatening. An informal social atmosphere should be fostered. Serving refreshments is encouraged to promote comfort. The moderator should be non-threatening and have some degree of similarity or familiarity to the participants. When that is not the case, people in positions of authority or influence relative to focus group participants are not recommended as moderators.

Inviting Group Participants

At the time prospective group members are invited, adequate background information is necessary so participants understand the context and the purpose of the study and begin to direct their thoughts toward that purpose. This introduction must also make it clear to the prospective group members what it is they are consenting to do. Care must be taken to ensure that all advance explanations are consistent from one group candidate to the other and are sufficiently general to avoid implying expectations as to

responses or otherwise influencing the outcome.

Focus Group Questions

Success of a focus group is contingent on the discussion questions. Rigor in focus groups is achieved by following a pre-designed, deliberately sequenced process. Questions must be open-ended and based on the literature and the specific purpose of the group. Pre-developing questions in a topic guide or structured question format is advised (Carey & Smith, 1994; Krueger, 1994). This helps ensure that the questions are logical and suitable to the purpose so that the maximum amount of information is elicited. A structured plan also helps ensure that the discussion is relevant and exploration of the issue is complete. Through careful planning the cogent questions can be covered in a time frame that is comfortable for the group members. The moderator must be alert to inflection and innuendo in the discussion, to body language and to what seem to be different views expressed about a subject at different times by the same person. Supplemental probe questions by the moderator clarify communication, explore topics, allow all participants to express their views and encourage expression of contrary opinions. If there is a change of viewpoint by a participant, the moderator explores what prompted the change. Encouraging and reflective techniques are important throughout discussion so that people will express divergent views. Obtaining the fullest range and variety of views possible is critical to achieving the purpose of the focus group (Kingry, Tiedje & Friedman, 1990).

Question sequencing should progress from general to specific to allow group members to become familiar with each other, the topic and the process. Krueger (1994)

recommends five categories of questions; opening, introductory, transition, key and ending questions. Each group of questions moves the group logically through the topic. Open-ended questions that stimulate discussion are followed by probe questions. The moderator defers unanticipated, tangential and serendipitous questions that arise during the interview to the end of the session. Opening questions are asked in a round-robin manner to 'break the ice' and identify commonalities. Introductory questions foster conversation and interaction and provide participants an opportunity to reflect on their experience in relation to the purpose of the discussion. Transition questions move the discussion into deeper exploration of how participants feel about or view the topic. Two to five key questions are used to direct the group members' attention on specific issues or aspects of the topic.

Closure is achieved with a series of questions that encourages participants to think back on what was said to ensure that the full range of ideas was expressed and to add ideas that may have been forgotten or that emerged as discussion progressed. Participants are asked to recap their most important concerns, usually in a round-robin method as at the beginning. After a brief synopsis of key ideas by the moderator the participants are invited to add to or otherwise modify the summary. The final statement by the moderator (or researcher if there are two people) is an overview of the purpose of the discussion similar to the opening explanation after which participants may again add anything that may have been missed.

Pilot testing of focus group questions can be done using a three-step process (Krueger, 1994). The first step is having experts with focus group experience review the questions and the questioning route. Step two is consultation with a small group of people

who are familiar with or similar to the target audience. Thirdly, if there are to be several focus group discussions the first group is a test group. If major changes are indicated by the first discussion the questions are revised and the results of that first discussion are excluded from the analysis of the study.

Analysis of Focus Group Data

Analysis of focus group data requires consideration of the group interaction effect on the members. Discussions should be comprehensively notated or electronically recorded or both to minimize researcher bias, to ensure that all data are reviewed and coded and so analysis can be verified. Intensity of analysis is dependent on the intent of the study (Carey & Smith, 1994; Krueger, 1994). Approaches used range from a general descriptive summary that identifies broad concepts or content domains and natural vocabulary, to a detailed interpretive analysis using a qualitative method such as grounded theory.

Description of the Focus Group Method for the Postpartum Study

An experienced moderator recommended by but not affiliated with the RHA was recruited to conduct the group interview. She was a young woman similar in age to the target population and interested in the concerns of young mothers and families in rural communities. Having someone other than the researcher to lead the discussion afforded the researcher a better opportunity to observe and record the group process without disrupting the discussion. It was also intended to minimize bias and researcher influence on the group. The researcher assumed the role of assistant moderator (Krueger, 1994).

The duties of this role are to make all of the arrangements, observe and record the discussion, respond to or ask questions when invited, thank the participants and debrief with the moderator following the discussion.

Development of Discussion Questions

The researcher developed the questions for the focus group in consultation with a researcher specialized in focus group methodology. The questions and the questioning strategy were revised based on discussions with the moderator and feedback from two mothers of young children. Questions were finalized following review by another experienced researcher (Appendix N).

Recruitment of Group Participants

Following approval from the Health Research Administration Board to conduct the focus group, invitations to take part in the discussion were issued to a number of women. A public health nurse obtained names of prospective participants from the RHA information system report of live births. The nurse contacted a random sample of mothers who had infants six to eight weeks old from the catchment area of one community clinic. She told the mothers about the focus group and obtained permission for the researcher to contact them by telephone to provide more information.

From the list of fourteen mothers the researcher invited eight women to take part in the focus group. The researcher gave her name, a telephone number where she could be reached and a description of her credentials. The postpartum research study was then described and the purpose of the focus group in relation to the study was explained.

Mothers were told that a research study was going to be conducted about social support and depression in women in their area and that the focus group was to find out how mothers with newborns might react to the questions before sending out the survey. Mothers were also told that they would be given a survey package at the time of the focus group and asked to complete the questionnaires prior to a discussion. The amount of time the process was expected to require was estimated as two and a half hours. The mothers were advised that if they chose to attend the group they would be asked to consent to the discussion being audio taped. Right to refuse to participate at any time was emphasized and it was explained that if they attended the group, they still had the right to decline to answer or discuss any topic. Child-care was offered to the women who wished to bring their infants or other children. Mothers were encouraged to telephone the researcher by collect call if they had any questions. A second telephone call was made one to two weeks later to give the mothers the opportunity to discuss any questions they may have, to confirm if they were still willing and able to attend and to finalize date, time and location arrangements.

The importance of individualized invitations for successful recruitment of participants was evident in this study. Mothers stated that it was because of the personal telephone call that indicated to them that the researcher was interested in their opinions and concerns that they were willing to take part. Seven women consented to attend the focus group. One woman, although willing, was unable to do so because of prior commitments. Two other mothers were unable to attend the group at the last minute due to schedule conflicts. These three mothers agreed to have the survey package mailed to them to evaluate the instruments, clarity of the instruments and instructions and response

burden. One mother subsequently returned the package by mail.

Description of Group Participants

Focus group participants were five mothers, none of whom had met any of the others previously despite the fact that they lived within about a fifteen-kilometer radius. They were similar to each other in that they all had newborns six to eight weeks old, were all English speaking and lived in or near a small rural town. All were living with their spouse or partner although the legal status varied. They were different with respect to living location (town, acreage, farm), had different educational backgrounds and had different numbers of children. This was the first child for one of the mothers. The other mothers had two or three children and some were at least part-time caretakers of step-children as well. The age range was about twelve years.

Group Setting

An informal meeting room in a centrally located public building was chosen as the location for the group discussion. A facility not affiliated with the health unit office of the RHA was used in order to maintain the privacy of the group participants and to ensure that it was a neutral environment. Directional and welcome signs were posted so the mothers could easily locate the room. Child-care was provided in a separate, private area nearby in the same building. To help create an informal coffee party atmosphere, beverages and snacks were served. The room was large enough that the three mothers who brought their infants had space for their baby paraphernalia. By situating tables around the periphery of the room the women were afforded some privacy while they

completed the questionnaires.

The moderator and the researcher greeted the mothers. Ample time was allowed so the mothers could organize their babies, have refreshments and engage in small talk without being rushed. This was important so that they could become familiar with the facility and the other participants. Individualized survey packages were distributed which included information letter (Appendix O) and consent form (Appendix P) specific to the focus group. There were two copies of the consent form in each package so that the mothers could retain a copy. These documents included consent to audiotape the discussion. The mothers were asked to read and sign their consent forms which were then sealed in an envelope separate from the completed surveys. The mothers were given as much time as needed to complete the questionnaires and provide written comments. Group discussion commenced when all of the mothers finished the surveys.

Introduction to the Interview

Participants were seated in a circle for the discussion. The moderator and researcher were also seated in the circle, a few chairs apart from each other. The tape recorder was placed on the floor in the centre of the circle. A brief introduction was given by the researcher which included the purpose of the discussion and how the data from the discussion group would be used in the research. The explanation given to the participants on the telephone was reiterated. The researcher explained how confidentiality would be maintained. The matter of group members maintaining confidentiality with respect to the group discussion was presented, acknowledging that the researcher had no way of monitoring or enforcing confidentiality at that level. The mothers were asked that if they

spoke with people outside of the group about the focus group, that they limit their comments to their own contributions. They were asked not to identify other participants and not to repeat or comment on the information, views or other content provided by other mothers.

The plan for the session was outlined and the researcher's role as recorder and observer was explained. Participants were told that there were no right or wrong answers, that each person's point of view was important whether it seemed negative or positive and whether it was the same or different from what someone else said. Eliciting the range of opinion was emphasized as the foremost purpose and that it was especially important for different points of view to be expressed if they existed. Prior to beginning the discussion the researcher reminded the participants that the discussion would be audio taped and verbally confirmed their agreement to proceed. The moderator was then introduced and the tape recorder was turned on.

Results of Focus Group Discussion

Discussion group results are summarized below according to the guiding questions. For the opening question the mothers were asked to proceed in a round-robin manner to introduce themselves and talk briefly about their new baby and other children. As the discussion progressed the moderator was able to follow the guide in the intended sequence. She used probe questions such as: "Does anyone else feel differently?" "Are there any other points of view?" "Is there anything else anyone would like to say?" The moderator also reflected on body language cues such as nodding or shaking of the head and tone of voice to clarify meaning and encourage expression.

Initial Reaction

Mothers were asked to imagine that they had received the survey package in the mail and then speculate on what they thought they would have done with it. Would they have answered it at all, and if they did would they have answered it all at once? Would they have answered it when they were alone or with someone else?

A range of opinion was expressed, from a definite 'yes' to reluctance to reply or that they probably would not have responded. Reasons given for probably responding were generally liking to fill out surveys, interest in things having to do with motherhood and particular personal interest because of previous experience. Reasons for probably not replying were being too busy and the very personal, invasive nature of the content. One mother articulated this by saying, "I don't know. It's very personal....it's those things that might happen to you but you don't know if you want to share it....stuff you might share with somebody who's close to you."

Receiving a clear and complete explanation of the purpose of the study was important to these mothers. They were interested in knowing if something worthwhile would result from them sharing such information and expressed the hope that this would be the case. The fact that someone was interested in what they were experiencing and their opinions was important to the participants, but they felt that mothers would not want to take time to answer the survey if they did not believe there would be something beneficial as an outcome. Most felt that being informed about the study by personal contact such as a telephone call prior to receiving the survey in the mail would be ideal and would increase the likelihood of people responding.

All of the mothers stated that they would have completed the survey by

themselves. Some would have filled it out in one sitting. Others felt it would take several tries because of interruptions by the baby and other family members.

Response Burden – General Acceptability

Mothers were asked to comment on how they felt about answering the questions, the length of time required and how realistic or reasonable it would be to ask new mothers these questions at seven or eight weeks postpartum. All participants stated that the length of time was acceptable. Timing at about eight weeks was also judged as suitable. These mothers felt that network members had adjusted to the birth and returned to a more usual pattern by this time. Thus the eight week juncture would be a good indicator of the true level of support available to mothers and whether it was adequate. Some expressed the view that mothers with newborns often have so many people around immediately after the birth (especially the firstborn) that it is troublesome, but they may not have enough support later. Comments made by some mothers on this subject were greeted by the others with vigorous nods of agreement. Examples of the comments are:

> After two months all the people have subsided.
>
> It's like a new car, right? Everybody likes that new baby at the beginning....
>
> People like that part. That's why they're right in there.
>
> It's like three or four months...down the road when everybody sorta thinks 'hey, you're adjusted, you're doing fine', you know that's probably when you need somebody.

Questions about how mothers might have felt if they responded to the questionnaires at home and possibly alone elicited the most extensive discussion.

Emotional reaction to the nature of the content was strong, especially to the depression scales. Feelings ranged from complete amazement that some mothers might feel so depressed as to contemplate self-harm, to personally identifying with severe symptoms as rated on several of the questions. During this part of the discussion the mothers all spoke in subdued, thoughtful tones even though reactions varied. One mother said that she did not realize other mothers felt "so bad" which elicited the reaction from another that it was not either bad or good how one felt, it was "different states" or a "frame of mind". Other mothers spoke in support of latter comment. Words that were repeated often to describe these feelings were 'up' or 'down'.

Each person said that her reaction to reading the questions would not be negative although in some cases mothers might have been surprised by the content. The mothers felt that receiving the survey in the mail would allow them to react in private to the survey and their feelings and thus it was not as invasive as talking to someone face to face. They could then think about their feelings and respond in their own way and their own time. Most often the reason the group members gave for believing that getting the survey in the mail was not negative was that by virtue of asking the questions there was implicit acceptance that such a range of feelings could occur in postpartum mothers. These mothers felt that such acknowledgment - that mothers may have times when they are 'feeling down' - may encourage women not to suppress feelings or hide their depression. As one participant said, mothers would know that "those feelings are acceptable". These comments are consistent with reports in the literature that mothers often conceal or do not recognize depressive episodes and feel ashamed and confused by those feelings, or that they are alone as a new mother in experiencing depressive

symptoms (Beck, 1996; Illingworth, 1989; Whitton, Warner & Appleby, 1996). None of the mothers felt they would have become upset or more depressed if they received the survey when they were feeling 'down', although they may not have answered it. One mother who described quite severe depression after previous births said that if anything, such questionnaires may have helped her identify what was happening which she said was positive. However she felt that she would not have answered it and may have hidden it. Thus, the mothers provided natural vocabulary and important feed-back about the key ethical question of the potential to increase risks for vulnerable mothers by using a mail-out survey.

None of the focus group mothers felt adversely about responding to two depression scales. They felt that the questions on the two instruments 'got at things' in different ways. Both instruments were described by the mothers as straightforward and easy to answer. There was considerable confusion and debate about the questions on weight and self image on the BDI; for example, one mother said, "The one I didn't answer was the weight gain one." Her comment prompted another woman to say "You've just had your baby, you gained 30 pounds. You'd like to lose some of it." Others agreed. Some mothers felt that women might be depressed because they had not lost weight or regained their figure after childbirth, especially if they felt that their partners did not find them attractive. One mother had experienced rapid and excessive weight loss during an episode of depression and recognized that symptom but had not recognized it as such at the time.

Focus group participants spoke at length about what they perceived as factors that influence their own emotional reactions in the months after childbirth and which they

believe are particularly interrelated with weight and whether or not they feel they are attractive to their partner. Most felt that these factors have many meanings for mothers and their partner relationships at this point in their lives which may be different than at other times. The mothers stated that if there was a weight question, then there should be room to explain with narrative comments. Alternatively, several questions would be needed to clarify the response and elaborate on other factors such as breast feeding and involution. Cox (1994) discusses similar difficulties reported by mothers in his practice about responding to questions about depressive symptoms such as weight loss. That was what led to the development of a self-report screening instrument for use in the perinatal period which omits weight change, appetite, and most other somatic symptoms (the EPDS). This does not imply that somatic symptoms are not just as significant as at other times or preclude the need to investigate those symptoms on assessment.

Discussion of the second key ethical issue arose regarding the type of follow-up and/or educational information that should be available for mothers, especially in relation to mothers who identify emotional concerns. Issues of right to privacy, autonomy and access to needed services were raised spontaneously by the focus group mothers. Comments made by some participants shaped the views of others on these topics. The moderator clarified, checked responses and sought explanations as opinions shifted. One mother said, "I don't want to answer it [the questionnaire] and then have somebody phone me up and say according to the questionnaire I'm depressed and need help". Her statement was representative of the concerns expressed by all the participants. The mothers felt that if they responded to the survey at home, they would not want the person reading the questionnaires to interpret their moods or 'states of mind' as negatively

affecting their ability to care for their infant. They were concerned about health providers "labeling" them as inadequate parents if they "couldn't cope".

One mother initially suggested that articles about depression would be useful to include in the package. As the discussion progressed, she revised this opinion by saying that would not be necessary and it might not be advisable as it could affect how the mothers would answer the questionnaires. All the mothers expressed the importance of being in control of intervention for themselves. They were concerned that people may not necessarily know what those sources of help were or how to access them. Several options were discussed at length to determine a suitable compromise that would protect mothers' privacy but make it easy for them to obtain needed help.

Recommendations for Improvement

Opinion varied as to whether the focus group participants would likely have returned the survey, but the package itself was well received. Several probes were required to elicit suggestions for improvement. The following is the list of group members' suggestions about the package and questionnaire format, most of which were incorporated into the final package.

- The format should be the same for all the questionnaires.
- The print size of the EPDS was too small and the format was difficult to read.
- Instructions on the NSSQ should ask for initials of the network members, not names. One mother was concerned about this from a personal privacy view. She felt that initials were acceptable but that providing names was not necessary.
- The question about network losses left the impression with some mothers that the

losses were through death (even though the question states losses through moves, etc.)

- Introductory information about the study needs to be very clear and there should be some indication of how study results might be used.
- There should be something on the outside of the survey envelope that would make it stand out as a postpartum survey.
- Personal contact to inform the mothers about the survey as well as a letter was preferred.
- In addition to detailed information about available resources, there should be a reply card that mothers could send to health providers requesting follow-up contact.
- Mothers should have the option of finding out the results of the study when it is finished.

Closing the Group Discussion

When asked to comment on what may have been missed and what was most important, the mothers returned to topics raised in their earlier discussion. They elaborated on feelings that might be engendered by the EPDS and what resource information should be included to ensure that appropriate help would be accessed when needed. Some of the mothers expressed interest in the outcome of the study and requested that they be sent information about the results.

Mothers were asked to reflect on their experience and reactions and whether they felt they had gained anything over the morning. No incentives were offered to these mothers but the group experience was described by the participants as intrinsically

rewarding. They felt the experience had been satisfying and they were pleased to have had the opportunity. Just being part of the discussion, realizing how much they had in common with other mothers, getting out, having tea and an opportunity to chat and exchange experiences were described as the highlights of the morning. They were also surprised and pleased at the amount of information they had contributed. One mother said it felt "really good". Some of the participants stated that taking the time to think about themselves and how they were feeling was positive. As one mother put it, "you get time to sit down and think, well, yah! This is how I feel and that's kind of nice"; something that she did not usually do.

The moderator reviewed and summarized the comments and recommendations and closed the discussion when no further new ideas were coming forward. One mother laughed and said, "you got a lot out of us!" Concluding comments by the mothers exemplify the effectiveness of the focus group method:

> Group discussion was good, brought a lot of stuff to the surface.
>
> Lot of stuff wouldn't have come to mind just out of the blue.
>
> I feel good because what one person would say you never thought and it triggered something….for you to think about….in another way. That was really good.

Documentation and Analysis

Immediately following the group interview the moderator and the researcher had a debriefing to capture impressions and highlights. The researcher transcribed the audio tape within two days of the discussion. Notes taken by the researcher during the interview and the debriefing, the transcript of the discussion and written comments provided by the

mothers were included in the data analysis of the focus group but were not included in the analysis of the survey data.

Summary of the Discussion and Recommendations

Five participants in the focus group provided helpful insights. Key comments were that the first reaction of some mothers would be to disregard the survey package because of being very busy, that the format of the survey instruments should be as consistent as possible for ease of answering, that the length of the package was acceptable, and that answering two depression questionnaires was also acceptable. The mothers felt that there were other questions that could be asked about influences on a mother's emotional state and support network which would give more in-depth information. Relationships, especially partner relationships, the mothers' activities or state of mind and health status on the day they answered the survey, labour and delivery experiences, and level of emotional and physical preparedness for the pregnancy were cited as circumstances these mothers felt were important. They concluded that level of detail would make the survey too lengthy and reduce the response rate.

All of the women expressed the view that they were glad someone was interested in how they were feeling. By their own report, two of the participants (at least) had experienced depressive episodes after the births of older children. All agreed that receiving such a package in the mail would not have caused them to feel worse although they might not necessarily have returned the survey if they were depressed at the time. They stated that it would help mothers validate their feelings. One focus group member captured the various opinions expressed within the group by saying that if mothers were

feeling depressed or "down they'll know that they're not the only one in the world that feels like that."

Focus group mothers felt that receiving preliminary information about the survey right after the baby was born either in the hospital or from the public health nurse would be important. The mothers thought that this early notice would create interest and increase the chance that the questionnaires would subsequently be read and answered. They suggested that it would be helpful to have something on the outside of the envelope so the questionnaire package could be readily identified as the postpartum survey.

Considerable discussion occurred regarding what and how follow-up should be done for mothers experiencing depressive symptoms. The recommendation that emerged was that resource information and postcards requesting follow-up contact should be included with the surveys. Focus group participants stated that mothers who received the survey would then have the option of obtaining help without having their privacy invaded or being labeled as not being able to cope with their baby. This would give mothers information and the "tools to reach out".

The EPDS and the Mother's Personal Information Sheet formats were altered to resemble the BDI which the mothers found easiest to read. The EPDS was revised into a one-page document instead of two and the print size was increased. Space was not left beside the questions, however, as this would have altered the nature of the instrument. Survey items were sequenced so the page with the open-ended question inviting narrative comments was the third item.

NSSQ instructions state that name or initials of network members are to be used in the list. These instructions were altered by drawing a line through the request for

names to emphasize that initials would be adequate. Similarly, in the question regarding network losses the examples of how losses might have occurred were underlined to reinforce that it was not only loss through deaths. Words were not deleted or changed, only emphasized.

Postcards that the mothers could send to request contact from a health worker were put into the survey package. A logo of a mother holding an infant was added to the information letter from the MOH, the resource information, the contact and reminder postcards, the follow-up information and the return address label on all of the envelopes. Instructions were given regarding depression risk including the score that suggests risk and warrants follow-up. A reply form was provided for mothers to ask the researcher to send them feedback from the study. The BDI was not used in the survey because the publisher declined consent for use in a study with a mail out methodology of test administration (Appendix Q).

CHAPTER 5

RESULTS

Study results are presented in this chapter. Descriptions of the sample including comparisons of the participant and non-participant mothers are followed by results of the analysis of the quantitative data. Correlations between pairs of variables were assessed by calculating Pearson *r* and Spearman rank (*rho*) correlation statistics. A logistic regression model specifies the relationship between depression risk and correlated variables. The chapter concludes with a descriptive summary of the findings of the content analysis of the unstructured data.

Findings of the Health Record Data

Eligible mothers were 73 percent (203/278) of the total number of mothers who had live births in the RHA in the period. Seventy-three of 203 eligible mothers returned surveys, a response rate of 36 percent. Data on seven variables obtained from the health record for all eligible mothers for the duration of the study are presented. Using independent samples t-test and chi-square analysis, mothers who responded are compared to mothers who did not respond to determine if there were differences on these variables ($p < 0.05$, two tailed).

Maternal Age, Gravidity, Infant Gender, and Marital Status

Eligible mothers ranged in age from 19 to 41 years with a mean of 27.52 years. Participant mothers ranged in age from 19 to 38 years with a mean of 28.16 years. As determined using the t-test for independent samples, the difference between these groups

was not significant (t = 0-.910, df = 201, p = 0.3641). Table 1 depicts the distribution and descriptive statistics of participant and non-participant mothers by age.

Women responding had from one to eight pregnancies which was the range for all eligible mothers. Non-participants had from one to seven children. For 27 (37%) of the participants and 34 (26.2%) of the non-participants, this infant was the first child. Seven participants (9.6%) and thirteen non-participants (10%) had five or more pregnancies. The mean number of children was 2.37 for the participants and 2.51 for non-participants which was not significant (t = 0.625, df = 201, p = 0.533). A few participants stated that they were also caring for step-children thus the number of pregnancies likely under-represents the child care burden of the mothers. Descriptive statistics for gravidity are shown in Table 2.

There were 205 infants born to rural mothers; 99 males and 106 females. The gender of the infant did not affect the mothers' response rate ($f(u)$ = 0.671, df = 1, p = 0.413).

Of the non-participant mothers, 84 (64.6 %) were married, 33 (25.4 %) were classified as common-law and 13 (10 %) as single. Sixty-one (83.6%) of the mothers who responded to the survey were married, eleven (15.1%) were in common-law relationships and one (1.4%) was single (Table 3). According to the health record information three of the women were single, however, two of these women reported on the questionnaire that they had common-law partners thus they were reclassified. The third single mother reported daily contact with her boyfriend. It is unknown whether the smaller proportion of single mothers in the respondent group compared to single non-respondents reflects a true difference in availability of partner support. On chi-square analysis married mothers

were more likely than unmarried mothers to respond ($f(u) = 9.69$, $df = 1$, $p = 0.008$).

Table 1.

Comparison of Maternal Age of Participants and Non-Participants

Maternal Age (years)	Participants n	%	Non-Participants n	%	Total n	%
<20	3	4.1	8	6.2	11	5.4
20 - 24	12	16.4	33	25.4	45	22.2
25 - 29	33	45.2	44	33.8	77	37.9
30 - 34	17	23.3	34	26.2	51	25.1
35 - 39	8	11.0	10	7.6	18	8.9
≥40	0	0	1	0.8	1	0.5
Total Subjects	73		130		203	
Mean(SD)	28.16 (4.71)		27.52 (4.88)		27.75 (4.82)	
Range	19 (19 - 38)		22 (19 - 41)		22 (19 - 41)	

Table 2.

Summary of Gravidity Data of Participating and Non-Participating Mothers

Number of Pregnancies	Participants n	%	Non-Participants n	%
1	27	37	34	26.2
2	22	30.1	46	35.4
3	10	13.7	22	16.9
4	7	9.6	15	11.5
5	1	1.4	7	5.4
6	4	5.5	3	2.3
7	1	1.4	3	2.3
8	1	1.4		
Total	73		130	
Mean	2.37		2.51	

Location and Type of Delivery

One hundred thirty-one mothers (64.5%) delivered in rural hospitals in eight different locations. There was one home birth; whether this mother responded to the survey is not reported to ensure privacy. Twenty-four of the 73 participant mothers (32.9%) and 47 of the 130 non-participant mothers (36.2%) delivered in city hospitals at six locations. Of survey participants, 13 (17.8 %) had caesarian section deliveries compared to 19 (14.6 %) non-respondents. The combined rate is 15.8 percent which corresponds to the provincial averages of 15 to 16% over the period 1993 to 1996 (Alberta Health, 1998). Caesarian section deliveries were performed in rural hospitals as well as city hospitals. Frequency data for delivery location and type are presented in Table 3. There was no difference between the groups as to the characteristics of location ($f(u) = 1.95$, $df = 1$, $p = 0.377$) or type of delivery ($f(u) = 0.359$, $df = 1$, $p = 0.549$).

Table 3.

Type and Location of Delivery and Marital Status of Participants and Non-Participants

	Type of Delivery				Location of Delivery				Marital Status					
	Vaginal		Caesarian		Rural		Urban		Married		C/L		Single	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Participant	60	82.2	13	7.8	48	65.8	24	32.9	61	83.6	11	15.1	1	1.4
Non-participant	111	85.4	19	14.6	83	63.8	47	36.2	84	64.6	33	25.4	13	10
Total	171	84.2	32	15.8	131	64.5	71	35	145	71.4	44	21.7	14	6.9

Results of Survey Data

Mothers in the study delivered their babies between March 16 and June 26. All of the mothers returned the consent form and completed the EPDS. Four participants did not report family income, one did not report educational attainment, one did not report method of infant feeding, and four did not report ethnic background. Four of the social support surveys had missing data in one or more questions although all surveys but one had responses to most questions. When data were missing, those subscales scores were excluded for that participant and statistics were calculated on the reduced sample size for that variable. Correlations for pairs of variables were calculated (Table 4). Fifty-five mothers (75.3%) responded to the open ended question.

Timing of Completion of Survey

Twenty-nine mothers (39.7%) completed the survey at seven weeks and 17 (23.3%) at eight weeks. Twelve mothers (16.4%) responded at nine weeks and ten (13.7%) at ten weeks postpartum. One mother responded at 11, one at 14 and one at 18 weeks. Two participants did not report the number of weeks, but from the dates of birth and the dates the surveys were received by the researcher, these mothers also replied at 12 weeks or less (Table 5). Younger mothers responded earlier ($r = .240$, $p = .041$). There was no relationship between the number of weeks postpartum and depression risk ($t = 0.782$, $df = 71$, $p = 0.437$).

Table 4.

Social Support and Risk of Depression: Correlation Coefficients for Pairs of Socio-Demographic and Mental Health Variables

Variables	MH treatment	support lost	depression history	income	functional support	living location	support, mother	gravidity	employment status	infant feeding	maternal age	education status	depression risk	support, partner
travel to doctor (min.)	.259* .027	.061 .615	.250* .033	.310** .009	-.030 .806	.501** .000	-.268* .025	-.022 .853	.025 .836	.005 .967	-.058 .627	.119 .321	.189 .109	-.136 .263
current MH treatment	–	.042 .727	.232* .048	-.030 .810	.215 .074	-.052 .664	.018 .885	.015 .897	.026 .830	.064 .592	.061 .610	-.172 .149	.069 .563	.040 .742
no. of support persons lost		–	.176 .146	-.249* .043	-.060 .632	.051 .675	-.174 .159	.143 .239	.223 .064	.068 .577	.003 .982	-.101 .407	-.021 .865	-.102 .411
depression history			–	-.164 .179	-.047 .701	.126 .289	-.161 .183	-.034 .778	.141 .235	.079 .508	.048 .685	-.143 .230	.503** .000	.353** .003
household income				–	.119 .340	.266* .027	.025 .845	-.107 .382	-.251* .038	.268* .027	.236* .05	.339** .005	-.134 .273	-.094 .453
functional support, total					–	.075 .540	.391** .001	-.270* .024	-.199 .099	-.015 .903	-.151 .212	.004 .975	-.213 .077	.467** .000
living location						–	.297* .013	-.295* .011	-.105 .375	.146 .220	-.048 .687	-.111 .354	.009 .943	.005 .965
support, mother							–	-.016 .897	-.071 .558	.057 .640	-.220 .068	-.161 .186	-.213 .077	.183 .129
gravidity								–	.251* .032	.243* .039	.441** .000	-.009 .940	-.189 .109	-.006 .958
employment status									–	.179 .133	.002 .987	-.288* .014	.083 .483	-.152 .210
infant feeding method										–	-.265* .025	-.197 .100	.381** .001	.097 .429
maternal age											–	.279* .018	-.106 .372	-.065 .593
educational status (years)												–	.019 .876	-.112 .360
depression risk													–	-.323** .006

*Correlation is significant at the .05 level (two-tailed test).
**Correlation is significant at the .01 level (two-tailed test).

Table 5.

Summary of Participants by Number of Weeks Postpartum at Survey

No. of Weeks Postpartum	n	%
7	29	39.7
8	17	23.3
9	12	16.4
10	10	13.7
11	1	1.4
14	1	1.4
18	1	1.4
unknown	2	2.7
Total Subjects	73	100.0
Mean (SD)	8.3 (1.77)	

Depression Findings

Each mother who responded to the survey completed the EPDS. Raw score is reported as a continuous variable and risk of depression as a nominal variable (yes/no based on the cutoff score of 10). Risk was also ranked as low (0 to 9), moderate (10 to 13) or high (14 or more) based on values recommended by the developer of the tool (Cox, 1994). Judgements regarding history of depressive symptoms were made by the researcher based on whether a sufficient number of symptoms of sufficient duration were reported to indicate that the woman may previously have met DSM-IV (American Psychiatric Association, 1994) diagnostic criteria for a depressive episode. Mothers were asked whether they saw a health care provider regarding mental health concerns in the past or were seeing someone at the time of the survey.

Prevalence of Risk

Raw scores on the depression scale ranged from 0 to 18. Seventeen mothers were at risk for depression (scores ≥10); a prevalence rate of 23.3 percent. Nine (12.3%) of these mothers were in the moderate risk and eight (11%) were in the high risk category. The overall mean score was 6.7 (4.45). Mean scores for the low, moderate and high risk groups were 4.73 (2.55), 11.22 (1.2) and 15.63 (1.6) respectively (Table 6).

Two mothers whose scores were in the high risk group had a score of two on question ten, 'sometimes' has thoughts of self harm. Two mothers in the moderate risk group scored one ('hardly ever') on question ten. In addition, three mothers with an overall score of nine or lower (9, 8 and 6) had a score of one on question ten. No mothers indicated that they 'quite often' though of harming themselves and no comments in the unstructured data indicated imminent danger thus the code was not broken by the researcher to contact any of the mothers directly. The frequency with which the scale value of each question was rated by the respondents according to risk category is presented in Tables 7 and 8. Responses to items that are scored from 3 to 0 on the questionnaire were reversed in the tables so that all questions are shown as though the most severe symptoms were the fourth option listed, for ease of presentation.

Table 6.

Summary of Subjects by Classification of Risk for Depression

Risk Classification	n	%	Mean (SD)
Low (EPDS ≤9)	56	76.7	4.73 (2.55)
Moderate (EPDS 10-13)	9	12.3	11.22 (1.20)
High (EPDS ≥14)	8	11.0	15.63 (1.6)
Total At Risk (EPDS ≥10)	17	23.3	13.29 (2.64)

Depression History

Twenty-one mothers (28.8%) reported histories of depressive symptoms. Eleven (52.4%) of the mothers reporting history were rated at risk by EPDS score. Mothers with EPDS scores of 10 or more at the time of the survey (64.7%), compared to the ten low risk mothers with histories (17.9%), were significantly more likely to have had a history of depressive symptoms of more than two weeks duration on one or more previous occasions ($f(u)$ =13.968, df = 1, p = 0.000). Thirteen (60%) mothers had received mental health treatment for previous depressive episodes. Three mothers reported that they were receiving care of some kind for mental health concerns at the time of the survey. Only one of these had an EPDS score of 10 or more. Travel time to receive physician care is related to receiving mental health treatment (r = .259, p = .027). Table 9 shows the number of mothers who reported symptoms suggestive of previous episodes of depression.

Table 7.

Participants' Ratings of Severity of Each Symptom by Question on the EPDS (Low Risk, n = 56)

	EPDS Score Rating of Symptom Severity			
Question	0	1	2	3
1. Able to laugh/see humour (0=yes, 3=no, most severe)	52	4	0	0
2. Look forward with enjoyment (0=yes, 3=no, most severe)	44	12	0	0
3. Unnecessary self-blame (0=no, 3=yes, most severe)	15	33	7	1
4. Excessive worry & anxiety (0=no, 3=yes, most severe)	20	23	13	0
5. Feelings of panic (0=no, 3=yes, most severe)	23	13	10	0
6. Inability to cope (0=coping, 3=not at all)	16	31	9	0
7. Sleep disturbed due to mood (0=no, 3=yes, most severe)	50	5	1	0
8. Sadness (0=no, 3=yes, most severe)	19	26	1	0
9. Crying (0=no, 3=yes, most severe)	31	24	1	0
10. Thoughts of self harm (0=no, 3=yes, most severe)	53	3	0	0

Table 8.

Participants' Ratings of Severity of Symptoms by Question on the EPDS (at risk, n =17)

	EPDS Score							
	10 to 13 n = 9				≥14 n = 8			
	Rating of Symptom Severity							
Question	0	1	2	3	0	1	2	3
1. Able to laugh/see humour (0=yes, 3=no, most severe)	4	5	0	0	0	7	1	0
2. Look forward with enjoyment (0=yes, 3=no, most severe)	3	6	0	0	1	7	0	0
3. Unnecessary self-blame (0=no, 3=yes, most severe)	0	2	7	0	0	2	4	2
4. Excessive worry & anxiety (0=no, 3=yes, most severe)	0	1	6	2	0	0	6	2
5. Feelings of panic (0=no, 3=yes, most severe)	1	1	7	0	0	1	6	1
6. Inability to cope (0=coping, 3=not at all)	0	1	8	0	0	0	7	1
7. Sleep disturbed due to mood (0=no, 3=yes, most severe)	5	2	1	1	1	4	3	0
8. Sadness (0=no, 3=yes, most severe)	0	6	3	0	0	1	7	0
9. Crying (0=no, 3=yes, most severe)	2	7	0	0	1	3	4	0
10. Thoughts of self harm (0=no, 3=yes, most severe)	8	1	0	0	5	1	2	0

Table 9.

Summary of Participants Reporting History of Symptoms of Depression

	n	%
No	52	71.2
Yes, this pregnancy	7	9.6
Yes, previous postp.	2	2.7
Yes, other	6	8.2
Yes, other & perinatal	6	8.2
Total Subjects	73	99.9

Socio-Demographic Characteristics of Mothers in the Sample

Characteristics of the mothers who responded to the survey are described. Mothers at risk for depression were compared to low risk mothers by calculating unpaired t-tests for variables where there were continuous data and chi-square analysis for dichotomous variables. No differences were observed between the risk and low risk groups for the following variables; marital status ($f(u) = 5.736$, $df = 1$, $p = 0.160$), maternal age($t = 0.927$, $df = 71$, $p = 0.357$), gravidity ($t = 1.605$, $df = 71$, $p = 0.113$), number of weeks postpartum ($t = 0.782$, $df = 71$, $p = 0.437$), infant gender ($f(u) = 2.232$, $df = 1$, $p = 0.135$), type of delivery ($f(u) = 2.039$, $df = 1$, $p = 0.153$) or location of delivery ($f(u) = 0.692$, $df = 1$, $p = 0.406$).

Method of Infant Feeding

Fifty-seven (79.2%) of the 72 mothers in the study who reported feeding method

were breastfeeding. Mothers who reported expressing breast milk for bottle feedings were classified as breastfeeding as they were still lactating. Ten mothers had initially breastfed but weaned their infants to bottle feeding by the time they completed the survey. Six weaned their babies at one to two weeks, and four between four and six weeks. Comparing response date to date of birth, all these mothers had discontinued breastfeeding five or more weeks before responding to the survey. Using chi-square analysis, mothers who were breastfeeding were determined to be less likely to have EPDS scores of 10 or more than bottle feeding mothers ($f(u) = 10.611$, $df = 1$, $p = 0.001$). Older mothers were more likely to breastfeed ($rho = -.265$, $p = .025$) as were mothers who had more children ($rho = -.243$, $p = .039$). Breastfeeding was also associated with delivery in urban hospitals ($rho = -.232$, $p = .05$). Baby girls were more likely to be breastfed ($rho = -.266$, $p = .024$).

Educational Level

Participants were predominantly middle class as determined by educational level and family income. Forty-nine of the 72 mothers who reported educational attainment had post-secondary education at trade, technical, college or university level (68.1%), of whom 16 (22.2% of total) had four or more years. Nineteen mothers (26.4%) had high school education and only four (5.6%) had less than grade twelve. On correlations analysis, post-secondary education was associated with increased maternal age ($r = .249$, $p = .035$). Mothers with more education were less likely to have current employment ($r = -.288$, $p = .014$). Advanced education was also associated with caesarian section delivery in this sample ($r = .243$, $p = .04$).

As numbers were small in some of the education categories, a binary variable was created; non-university and some university education. Chi-square analysis demonstrated no relationship between advanced educational attainment and depression risk ($f(u) = 0.015$, $df = 1$, $p = 0.902$). In this sample, on chi-square analysis the relationship between feeding method and education was significant ($f(u) = 4.533$, $df = 1$, $p = 0.033$).

According to the 1991 census figures, 46.8 percent of adults in that area had not completed high school and only 5.6 percent had university degrees. The level of education of the study participants appears higher than the adult population as a whole in the region. Statistical analysis was not performed as data by corresponding age categories were not available.

Income and Employment Status and Living Location

Of the 69 mothers who reported family income, 24 (35%) reported annual family incomes between $20,000 and $40,000, 8 (11.6%) of $80,000 or more and 8 below $20,000. Spearman rank correlation calculations demonstrated that higher household income was related to breastfeeding ($rho = -.268$, $p = .027$), increased maternal age ($r = .339$, $p = .005$), and living in towns rather than on farms or acreages ($rho = .266$, $p = .027$). There was no relationship between family income and depression risk ($f(u) = 1.841$, $df = 4$, $p = 0.765$).

Twenty-six (35.6%) of the mothers were employed and on leave of absence, nine (12.3%) were working and four (5.5%) were looking for work or planning to look for work or return to school. Mothers who stated they were self-employed were classified as working. Thirteen women (17.8%) had worked until the birth of this baby but were not

planning to return to work, and 21 (28.8%) classified themselves as homemakers who had been out of the workforce for two years or more. Occupational status was recoded as a dichotomous variable, employed/not employed, where employed included women working and those on leave of absence. On chi-square analysis, there was no relationship between employment and depression risk ($f(u) = 0.007$, $df = 1$, $p = 0.933$).

Seventeen (23.3%) of the participants lived on farms, 21 (27.4%) on acreages, six (8.2%) in villages or hamlets and 29 (39.7%) in small towns. Living location was recoded as town/other. Mothers living on farms and acreages or in villages had more children ($rho = -.295$, $p = .011$). No relationship was observed between living location and depression risk ($f(u) = 0.019$, $df = 1$, $p = 0.889$). Descriptive statistics for education, occupational status, living location and family income are summarized in Table 10.

Travel to Health Care Services

Time required by mothers to travel to obtain health care was reported in minutes, ranging from one to 180. On average the women travelled 28 minutes to the health centre where they usually obtained services, 26 minutes to their family physician and nearly 14 minutes to the nearest health unit office. Forty-eight of the mothers (65.75%) saw specialists for maternity care. The mean travel time for this purpose was 90 minutes. Seventeen mothers (23.3%) travelled between one and two hours and eighteen (24.7%) travelled two to three hours. Of the women who saw specialists, only two (4.2%, 2.7% of all respondents) travelled ten minutes or less. Travel time to family physicians and health unit services was considerably less than to specialists as 38 and 49 percent respectively were ten minutes or less away from these services. Travelling longer for physician

services was related to lower household income (*rho* = -.310, *p* = .009) and history of depression (*rho* = .250, *p* = .033). No differences in depression risk were observed based on the travel time required by the mothers to obtain health care services by specialist physicians ($t = 1.688$, $df = 71$, $p = 0.096$), other physicians ($t = -1.041$, $df = 71$, $p = 0.301$), the health unit ($t = -1.310$, $df = 71$, $p = 0.194$), or at the hospitals that mothers usually accessed ($t = 0.832$, $df = 70$, $p = 0.408$). Travel time data are summarized in Table 11. Travel times were grouped into seven intervals; 15 minute intervals for the first hour, then two 30 minute intervals, and all times over two hours are in the last category.

Ethnic or Cultural Background

Mothers were asked in an open-ended question to describe their ethnic or cultural background. Sixty-nine responses were given. Twenty-one (30.4%) mothers indicated they are Canadian and seven (10.1%) reported they are Canadian with one other ethnic origin. Two are Metis (2.9%). A few mothers volunteered that they are landed immigrants or naturalized Canadians. Ethnic origins reported alone and in various combinations are summarized in Table 12.

Table 10.

Socio-Demographic Characteristics of Participants

	n	%
Living Location		
Farm	17	23.3
Acreage	21	28.8
Village/hamlet	6	8.2
Town	29	39.7
Total Subjects	73	
Employment Status		
Working	9	12.3
On Leave of Absence	26	35.6
Did work, not returning	13	17.8
Homemaker/not employed ≥2 yrs.	21	28.8
Other	4	5.5
Total subjects	73	
Educational Attainment		
Some high school	4	2.8
Grade 12	19	26.4
Post-secondary, 1-3 yrs.	33	45.8
Post-secondary, 4-5 yrs.	13	18.1
Post-secondary, ≥6 yrs.	3	4.2
Total Subjects	72	
Household Income ($)		
≤19,999	8	11.6
20,000 to 39,999	24	34.8
40,000 to 59,999	18	26.1
60,000 to 79,999	11	15.1
≥80,000	8	11.6
Total subjects	69	

Table 11.

Travel Time Required by Mothers to Obtain Health Services

	Type of Health Service							
	Specialist Phys.		Health Centre		Usual Phys.		Health Unit	
Minutes	n	%	n	%	n	%	n	%
0 - 15	2	2.8	37	50.7	35	47.9	52	71.2
16 - 30	4	5.5	17	23.3	19	26.0	20	27.4
31 - 45	6	8.3	6	8.3	8	10.9	1	1.4
46 - 60	3	4.1	5	6.9	7	9.6	0	0
61 - 90	13	17.9	2	2.8	1	1.4	0	0
91 - 120	14	19.2	4	5.5	3	4.1	0	0
> 120	6	8.3	1	1.4	0	0	0	0
other	25 (n/a)		1(unknown)		0		0	
Total Subjects	73		72	73		73		

Table 12.
Summary of Ethnic Origins Listed by Mothers

Canadian	28				
Hungarian, German, Ukrainian, Polish	24	Dutch, Swedish, Scandinavian, Norwegian	10	Metis, French, Italian	13
Scottish, English, Irish	22			Other*	3

*Note: Three other ethnic backgrounds or countries of origin that were named by mothers are not listed here to preserve anonymity.

Characteristics of Mothers with Depression Risk and Depression History

Eight of the women rated at risk of depression were bottle feeding at the time they answered the survey, eight were breastfeeding and infant feeding method was unknown for one. Of the mothers who were bottle feeding, four had initially breastfed but had weaned their infants five weeks or more before completing the survey. All ten mothers with previous histories of symptoms but who were in the low risk group were breastfeeding. Chi-square analysis demonstrated no relationship between depression history and feeding method ($f(u) = 0.181$, $df = 1$, $p = 0.670$).

Educational status of the moderate and high risk mothers ranged from less than high school completion to eight years of post-secondary education, the full range for all study participants. One mother did not report education. Five (31.3%) of the sixteen mothers at risk who reported education and three (30%) with symptomatic history had grade 12 or less, which corresponds with 23 (31.9%) in the whole sample. Five (29.4%) of the risk group had four or more years of post-secondary education compared to eleven (22 %) of the low risk mothers. In the group of mothers who reported history but were at low risk by EPDS score, six (60 %) had one to three years of education after high school and one (1.4%) had four years or more. On chi-square analysis there was no relationhip between depression history and educational status ($f(u) = 0.99$, $df = 1$, $p = 0.753$).

Characteristics of the mothers at risk of depression and mothers with histories of depressive symptoms but who had low risk when surveyed are presented in Table 13 and Table 14 respectively. Mothers are listed in no particular order and their living location, marital status and age are omitted from the tables to ensure that they cannot be identified.

Table 13.
Characteristics of Rural Postpartum Mothers who were Rated at Risk for Depression (EPDS of 10 or more), n =17

EPDS Score	# weeks postpartum	Feeding Method	Gravida	History	Educ.*	# in Network	SS** Total (e/a)	Total Network	Partner Support	Losses Y/N
11	10	unknown	5	Yes	gr. 12	5	88	50	18	No
13	7	bottle	1	Yes	1 yr. P-s	5	70	46	20	Yes
10	7	breast	2	No	4 yr. P-s	7	78	68	12	No
14	7	bottle	1	Yes	< gr. 12	18	282	160	23	No
14	7	bottle	2	Yes	< gr.12	3	61	27	17	Yes
14	7	breast	1	Yes	1 yr. P-s	13	221	111	24	No
12	8	breast	2	Yes	unknown	14	267	132	23	No
17	8	breast	2	No	4 yr. P-s	7	110	58	19	No
11	9	bottle	4	No	1 yr. P-s	5	115	53	23	No
17	10	bottle	1	Yes	gr. 12	7	unknown	65	unknown	Yes
10	9	breast	1	No	5 yr. P-s	14	279	133	23	No
10	7	bottle	1	No	4 yr. P-s	15	259	138	23	No
16	9	breast	2	Yes	3 yr. P-s	10	111	100	14	No
18	8	breast	2	Yes	2 yr. P-s	8	87	78	18	No
15	9	bottle	2	Yes	gr. 12	7	68	62	16	Yes
13	7	breast	1	Yes	8 yr. P-s	14	231	126	21	No
11	8	bottle	1	No	3 yr. P-s	14	237	120	24	Yes

*P-s refers to post-secondary education. **SS Total is the sum of scores on emotional support (e) and tangible aid (a) questions on the NSSQ.
Note: The 4 mothers who were bottle feeding but initially breastfed had weaned their infants 5 to 7 weeks prior to responding to the survey.

Table 14.

Characteristics of Rural Postpartum Mothers with History of Depressive Symptoms who had EPDS Scores of 9 or Less, n = 10

EPDS Score	# weeks postpartum	Feeding Method	Gravida	History	Educ.*	# in Network	SS** Total (e/a)	Total Network	Partner Support	Losses Y/N
2	10	breast	2	Yes	3 yr. P-s	10	196	93	24	No
3	8	breast	2	No	2 yr. P-s	7	131	70	20	No
3	unknown	breast	3	No	2 yr. P-s	12	212	110	24	No
4	7	breast	3	Yes	2 yr. P-s	9	162	81	22	Yes
8	9	breast	2	Yes	3 yr. P-s	15	264	133	21	Yes
4	8	breast	1	Yes	<gr. 12	24	385	223	23	No
9	7	breast	2	No	<gr. 12	19	186	167	22	yes
8	8	breast	3	No	4 yr. P-s	11	147	111	15	No
7	8	breast	4	Yes	gr. 12	5	86	51	20	Yes
9	7	breast	3	Yes	1 yr. P-s	8	unknown	77	unknown	Yes

* P-s refers to post-secondary education
**SS Total is the sum of scores on emotional support (e) and tangible aid (a) questions on the NSSQ

Note: Maternal age, living location and type and location of delivery are excluded from Tables 13 and 14 to maintain anonymity.

Social Support Findings

All 73 mothers in the sample returned the NSSQ but due to some incomplete responses, data are reported for 70 to 72 subjects depending on the subscale. The amount of social support perceived by the mothers as available to them is described as total functional support which is comprised of emotional support (4 questions) and aid or tangible support (2 questions); size of network; and total network support. The latter includes the frequency of contact between the mother and members of the network and the length of time she has known them. Relationships between social support and depression risk were assessed using unpaired t-test, except whether the mothers had losses from their networks which was assessed using chi-square analysis. Descriptive statistics for NSSQ subscale data are summarized in Table 15.

Size of Support Networks

Mothers had from 2 to 24 support persons. The average number named in the support networks was 10 (5.14). Network size was inversely related to number of children ($r = -.270$, $p = .021$). There was no difference in depression risk based on the size of the mothers' support networks ($t = 0.264$, $df = 71$, $p = 0.793$).

Composition of Support Networks

Types and sources of support vary from person to person and for one person over time and circumstances. Instructions for completing the NSSQ included a list of categories of support persons; spouse or partner, family or relatives, friends, work associates, neighbours, health care providers, clergy and other. In total, ten different

categories of support persons were identified by the participants but each person named only a few categories.

The majority of network members were named from two categories (family and friends), even when the networks were large. All participants named their partners. At least one other close family member, usually the mother, was listed by all except one who listed her partner and several friends. Three women did not list their mothers in their networks. Several mothers listed one or more children and a few included the newborn. Most named friends, sometimes distinguishing their best friend from other friends. Twenty-six (35.6%) mothers identified six to nine family members. Fourteen (19.2%) had more extensive extended family such as cousins, in-laws, grandparents, aunts and uncles. Ten (13.7%) mothers listed only family members and eight (11%) listed only one other person besides family; either a friend or a neighbour. Twenty mothers (27.4%) named one or two support persons in addition to their partner. Eight women listed three or four support categories and four (5.5%) listed five or six categories. Neighbours were the third most frequently listed support, but only 19 times. Work associates were named 12 times, nurses ten times and doctors nine times. Other health care providers such as chiropractor and therapists were listed six times, clergy five times and breastfeeding contacts were named four times. Two mothers identified their pets.

Perceived Amount of Social Support Available

Scores for total functional and total network support are the summed amounts of support rated for each person for each type of support. Emotional and tangible aid (total functional support) from the woman's partner and mother were analyzed as separate

variables in addition to the support available from all network members. Ratings for each question about functional support was on a scale of 0 to 4 and network properties were rated on a scale of 1 to 5, thus total scores varied widely on these subscales. Total functional support scores ranged from 43 to 549 with a mean of 182. Network scores ranged from 21 to 237 with a mean of 95.75. Number of children was inversely related to total functional (r = -.270, p = .024) and total network support (r = -.230, p = .05). There was no relationship between depression risk and total network support (t = 0.589, df = 70, p = 0.557) or total functional support (t = 1.000, df = 68, p = 0.321). Support scores for the participants' partners and mothers ranged from 12 to 24 and 0 to 24 respectively. Women who lived further from their local physicians, health units and hospitals or health centres received more support from their mothers (r = -.268, p = .026; r = -.340, p = .004; r = -.251, p = .038, respectively). There was no relationship between depression risk and the amount of support provided by the woman's mother (t = 1.419, df = 68, p = 0.161). There was a negative relationship between depression risk and the amount of support perceived by the woman to be available from her partner (t = 3.462, df = 68, p = 0.001).

Frequency of Contacts with Network Members

Mothers with small networks tended to see all members daily or weekly except for one who listed three network members. She had daily contact with one person and monthly contact with the other two. Contacts by the women with their network members were predominantly daily or weekly (74.5%). Most of the of support people whom the participants saw or spoke with on the telephone monthly or a few times a year were siblings, extended family such as cousins and grandparents, or health care providers.

Occasionally participants reported seeing their mothers on that basis. Only one of the support persons listed was seen yearly or less.

Losses From Support Networks

Support persons lost from the mothers' networks in the previous year due to events such as moves, deaths or loss of employment, and the amount of support no longer available were reported. Losses ranged from one to 21 people. Seventy-two mothers responded to question nine, whether they had experienced losses. Of the 24 who had losses, seven had lost one person, four had lost two persons. The mean number of members lost was five. Just over half (14) lost family members. One mother lost a partner by separation, 17 lost friends and six reported losses of neighbours or work associates. One participant specified clergy and two listed health care providers as no longer available due to moving. Two mothers replied that they had losses but did not provide any information as to number, category or amount of support lost. Higher income was negatively related to network losses ($r = -.249$, $p = .043$).

Five (30%) of the women with EPDS scores of 10 and more reported losses compared to 18 (32 %) of the total number of women with low risk scores. Half of the women who had scores of nine and lower but who had history of depression had experienced losses. There was no difference in the frequency with which losses were reported, based on EPDS score ($f(u) = 0.154$, $df = 1$, $p = 0.695$). Frequency data for the amount of support lost are shown in Table 16.

The principle difference between the low risk and other mothers with losses was that low risk mothers tended to rate as low the amount of support formerly provided by

the lost members. Two mothers who lost several network members from several categories reported moderate or a great deal of loss still listed large networks (20 and 21 members) and the members provided high levels of support. Five mothers with symptomatic histories reported several losses and four of these rated the support lost as 'a great deal' or 'quite a bit'. There was no relationship between depression risk and the total amount of loss reported ($t = 0.241$, $df = 68$, $p = 0.810$).

Table 15.

Summary of Descriptive Statistics for Norbeck Social Support Questionnaire Subscale Data

Sub-scale	n**	Range		Mode	Mean (SD)
Emotional support	70	27.00	365.00	84.00	128.13 (71.2)
Aid	71	16	184	31.00	53.73 (30.28)
Total functional	70	43	549.00	87.00	182.11 (99.61)
Total network	72	21	237.00	50.00	95.75 (47.21)
Total Functional-partner	70	12	24	3	21.81 (2.75)
Total functional-mother	70	0	24	24	18.23 (7.21)
Number listed	73	2	24	5	10.06 (5.14)
Number lost	72	0	21	0	1.17 (4.33)
Total loss	70	0	26	0	2.76 (5.59)

*Multiple modes exist, smallest value is shown.
**Network members listed for 73 subjects but score data are incomplete for some subscales

Table 16.

Amount of Support Lost with Loss of Members from Network

Support Lost	n	%
None	3	12.5
A little	4	16.7
Moderate	8	33.3
Quite a bit	5	20.8
A great deal	4	16.7
Total subjects	24	

Relationships Between Variables

Relationships between independent variables and the dichotomous dependent (outcome) variable depression risk were assessed using logistic regression analysis. Estimates are calculated using the logit transformation of the regression model equation, as appropriate when the dependent variable and/or the independent variable(s) are dichotomous (Daniel, 1995). Logistic regression estimates the probability (odds) that persons possessing the risk factor(s) will develop the outcome (Daniel).

The purpose of this study was to examine the relationship between social support and risk of depression. A predictive model was constructed in a step-wise fashion, assessing the interactions between depression risk, partner support and other variables shown to correlate with depression risk. Goodness-of-fit tests were used to check the model.

Partner Support as a Predictor of Risk for Depression

Of the five variables in the social support data set, only partner support was significant in the univariate analysis, therefore partner support was the only social support variable entered into the regression model. Although treated as a continuous variable in the univatiate and bivariate analysis, partner support is an ordinal variable. A numeric value was calculated by summing scores on six questions that were scored on a Likkert-type scale. Thus to enter into the logistic regression equation, another variable was created by dividing partner scores by four (Hosmer & Lemeshow, 1989). This technique maintains the structure of the relationship between the variables and is more meaningful as it creates "a clearer picture of the relationship" (Hosmer & Lemeshow, p. 4). The new variable was substituted into the model with the result that the odds ratio (OR), the measure of how much less the odds are of mothers with high partner support having EPDS scores of 10 or more, was 0.2588627 (CI = 0.10863, 0.6168854). This means that a person with a partner support score that is four points higher than another person is less likely to be at risk of depression.

Estimating History and Infant Feeding Method as Predictors of Risk for Depression

Other variables that were associated with EPDS scores were added to determine the extent to which they contributed to the model. Feeding and history were the two variables in addition to partner support that were observed to be related to depression risk in univariate analysis. Addition of feeding to the model was significant (OR = 5.7614; CI = 1.341104, 24.75117; p=0.019) and did not confound the relationship between

partner support and depression (OR = 0.7770779; CI = 0.3405705, 1.773054; $p = 0.549$).

Addition of history versus no history of depression in the model is shown in Table 16. The relationship between partner support and history, assessed by adding it to the logistic regression, was found to be significant ($p = 0.012$). The odds ratio for the partner-history relationship is 0.3612289, so that mothers who have higher partner support scores are estimated to be approximately a third as likely to have had a history of depression.

When feeding was added back into the model with history and partner support, feeding still did not confound the partner support-depression relationship; the odds ratio changed only slightly from 0.336953 to 0.3249546. In this estimate the standard errors for the odds ratios for history and feeding are large, which indicates collinearity. However, as there is no relationship between history and feeding in this data set there can be no collinearity. A possible explanation for these results is that because of the small sample size, and thus small cell numbers, the odds ratios for history and feeding are inflated and unstable (Pregibon, 1981). Further study would be needed to clarify the relationship between history and feeding.

Education was entered into the logistic regression because it was shown by chi-sqare analysis to be significantly related to feeding. In the logistic regression, education modified the relationship between existing covariates and depression. However, adding education to the model with feeding and/or history caused the odds ratios and standard errors for feeding to become very large (OR for feeding increased to 9.592814 from 5.761414). To examine these variates further, data were sorted by the binary variable for education and tabulated for depression risk and feeding. This calcualtion demonstrated no

observations in some cells and low cell numbers in some cells. Logistic regression results are unstable when cell numbers are small (Hosmer & Lemeshow, 1989) thus education was not included in the model.

Results: A Predictive Model of Depression Risk in Postpartum Mothers

A model that includes the three significant variables of partner support, history of depression and method of infant feeding is shown in Table 17. Partner support and history of depression are correlated. No relationship was found between infant feeding method and partner support or depression history. Together these characteristics are highly predictive of depression risk, correctly classifying the risk more that 80 percent of the time in this sample.

Table 17.

Logit Estimates of the Model Combining Effects of Partner Support, History and Feeding on Depression Risk (n = 69)

Log Likelihood	= -23.9534	chi2(3)	= 21.70
Prob > chi2	= 0.0001	PseudoR2	= 0.3117

Depression risk	odds ratio (OR)	Standard Error	z	P>[z]	95% confidence interval
partner support	0.325	0.158	2.312	0.021	0.125, 0.843
history of depression	7.532	6.176	2.462	0.014	1.5096, 37.576
feeding	9.452	8.339	2.546	0.011	1.677, 53.275

Checking the Model

The model was assessed by using it to predict the outcome depression risk, which was then compared to the actual number of times being at risk of depression was the outcome. The model predicted at least 50 percent probability of being at risk depression, when in fact that outcome occurred, 84.06 percent of the time. A cutoff of 50 percent is a standard way to look at the results of logistic regression (Hosmer & Lemeshow, 1989). With a cutoff of .9, 82.6 percent of the time the model had a predicted probability of depression risk of at least 90 percent when that was the outcome; indication of a good-fitting model.

Another means of assessing the goodness-of-fit of a logistic regression model to the data set is to examine the area under the receiver operating characteristic (ROC) curve (Hamilton, 1992). The ROC curve is a graph of the probability that a condition-free person will test negative (specificity) against one minus the probability that a person at risk of depression tests negative (sensitivity). As the number of correctly predicted risk cases increases the number of correctly predicted low risk cases decreases. The data are sorted by the predicted index and the vertices of the curve computed. The greater the area under the curve, the better the fit. In Figure 2, the ROC curve for the model demonstrates a good-fitting model because more than 85 percent of the area is under the curve.

Figure 2. Receiver Operating Characteristic Curve (ROC)

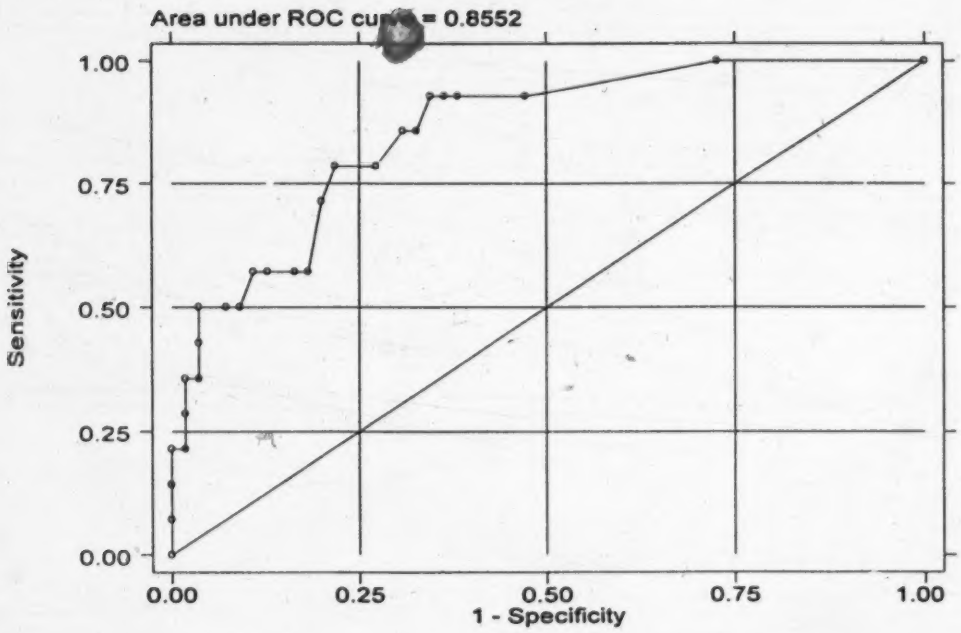

Figure 2. The Receiver Operating Characteristic Curve (ROC) for rural postpartum mothers was calculated to assess the fit of the logistic regression model to the data for depression risk and three predictor variables. A good-fitting model is demonstrated as the area under the ROC = 0.8552 (Hamilton, 1992).

The Pearson chi-square goodness-of-fit test was estimated for the model to test the observed against the expected number of responses using cells defined by the covariate patterns (Hosmer & Lemeshow, 1989). Since the test is nonsignificant the model cannot be rejected (Table 18). Covariate patterns were checked to determine if any points in the data that do not fit the main part of the data are unduly influential on model coefficients. One way to assess which covariate patterns are poorly predicted by a model is to calculate the effect on the Pearson chi-square goodness-of-fit statistic by deleting a particular observation (Hamilton, 1992). That is, covariate patterns that cause high change in the Pearson statistic do not 'fit' the model. Change in the Pearson chi-square statistic owing to the deletion of each observation was plotted to determine if there are covariate patterns that have a high change in this statistic (Figure 3). There are three covariate patterns made up of six observations that are considerably higher than the rest of the observations.

Table 18.

Pearson Chi-square Goodness-of-Fit Test for the Logistic Regression Model for Depression Risk

number of observations	69
number of covariate patterns	26
Pearson chi2 (22)	20.39
Prob > chi2	0.559

To assess the influence of each observation, Pregibon's influence statistic (dbeta) was calculated. This measures the difference in the slope coefficient owing to the deletion of a particular observation along with all others that share the same covariate pattern (Hosmer & Lemeshow, 1989). Graphing dbeta against the predicted probabilities showed that some observations were influential (Figure 4).

To determine which covariate patterns fit poorly and are influential, the change in Pearson chi-square was plotted against the predicted probabilities and symbol size on the graph was made proportional to Pregibon's influence statistic (dbeta) (Figure 5). Covariate patterns that have a large chi-square value are near the top of the graph. A large dbeta value has a large symbol size. This calculation indicates that there are perhaps six (8.2%) relatively influential and poorly fit covariate patterns. One option is to delete the poorly fit observations (outliers) to determine the effect on the model. Another option is to identify and examine the outlier cases to describe their characteristics and identify how they differ from the predicted pattern. By substituting the mothers' code numbers for symbols, the participants whose data do not fit the model were identified (Table 19). Two code numbers were in virtually identical positions on the graph but their risk factors were different. While bottle feeding, depression history and low partner support are predictive of EPDS scores of 10 or more, the first two mothers listed were in the risk group but each had only one of the risk factors. The fourth mother listed had a very high score and had none of the three risk factors; although her partner support was not optimal, it was in the second highest category. A mother with an EPDS score of 8 had two risk factors; history and low partner support. Although the model predicted the largest proportion of mothers

at risk, some mothers may experience depression in the absence of these risk factors. Others do not become depressed in spite of factors that may predispose them to the disorder.

Table 19.

Risk Characteristics of Mothers for whom Data do not Fit the Regression Model, n = 6

EPDS Score	Depression History	Infant Feeding Method	NSSQ Score Partner
10	No	Bottle	23
11	No	Bottle	23
2	No	Breast	19
17	No	Breast	19
3	No	Bottle	24
8	Yes	Breast	15

Figure 3. Changes in the Pearson Chi-square Statistic

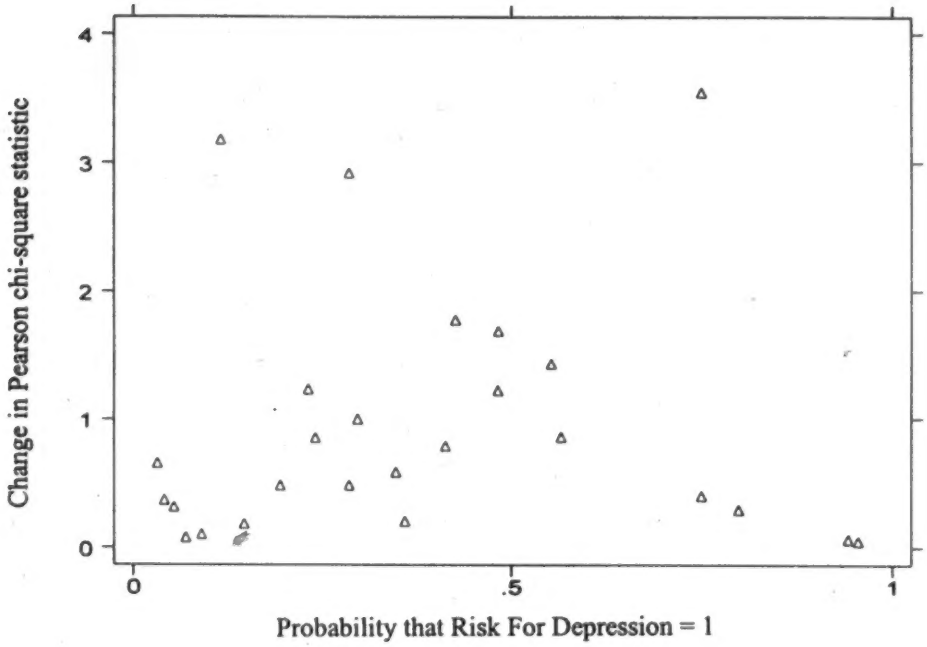

Figure 3. In this graph the changes in the Pearson chi-square statistic as a result of deleting each observation are plotted against the probability that the outcome will be risk for depression. Covariate patterns that are poorly predicted by the model are demonstrated as they deviate from the vector coefficient. In the graph the points going from the top left to the bottom right correspond to covariate patterns with the number of positive outcomes equal to the number in the group. The points going from the bottom left to the top right correspond to 0 positive outcomes. Points toward the top of the graph represent influential patterns. These cases can be identified to determine their characteristics.

Figure 4. Plotting of Pregibon's Influence Statistic (dbeta)

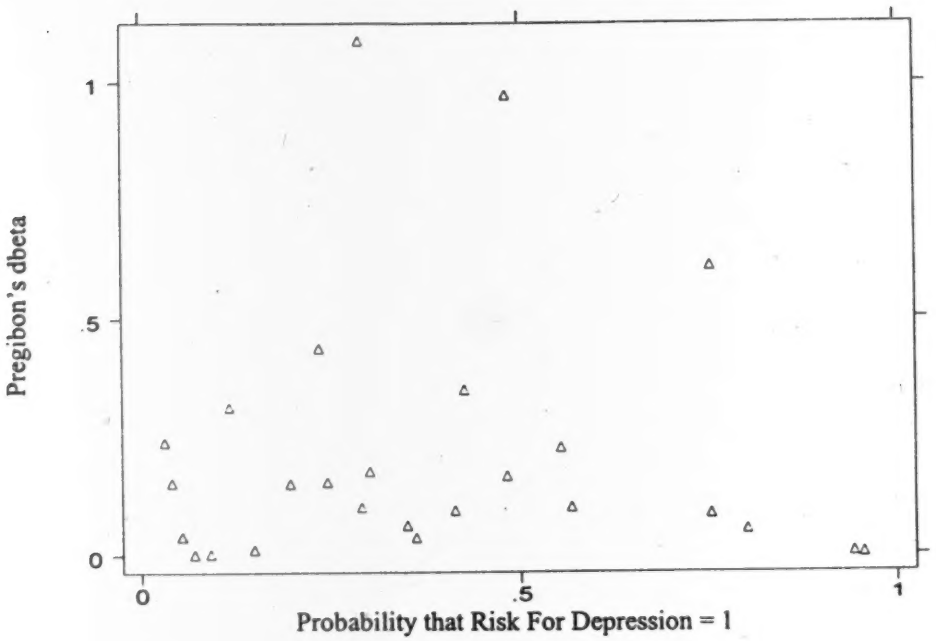

Figure 4. Plotting of Pregibon's influence statistic against the probability of correctly predicting depression risk when depression risk was the outcome shows that some observations are poorly fit by the model.

Figure 5. Pearson Chi-square Plotted Against Predicted Probabilities with Symbol Size Proportionate to Pregibon's Influence Statistic (dbeta)

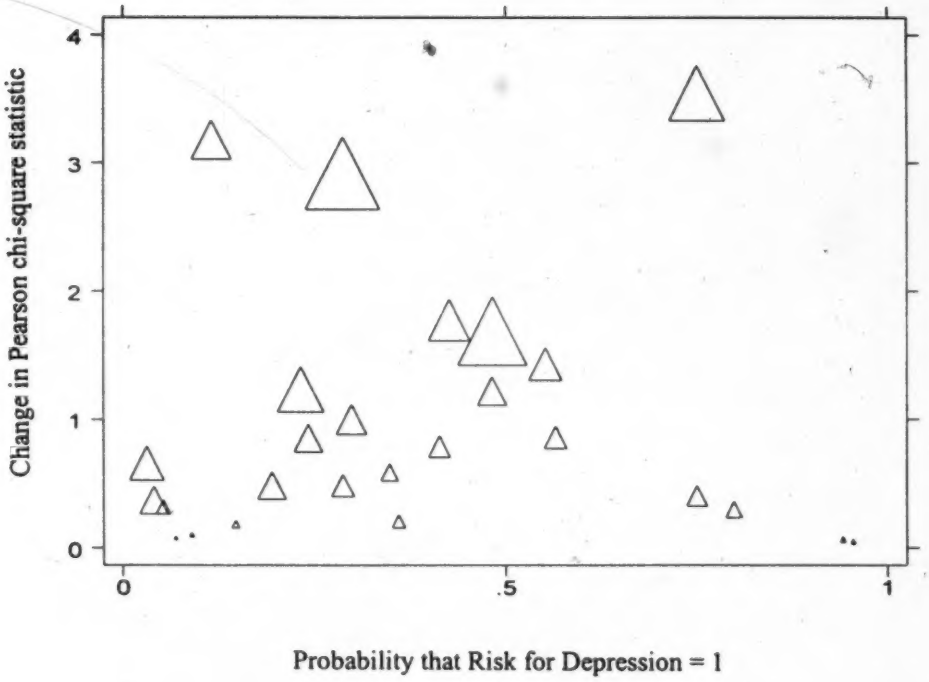

Figure 5. Pearson chi-square values plotted against predicted probabilities, with symbol size proportional to Pregibon's measure of influence, demonstrate which covariate patterns do not fit the model and the extent to which they are influential patterns (Hamilton, 1992). The graph indicates six poorly fit cases (8.2%) that were matched to their unique identifiers to identify their characteristics.

Findings from the Unstructured Data

The purpose of obtaining comments from the mothers in this study was to enhance understanding of the study participants. Qualitative data "invite readers to enter the world of those who were studied" (Stiles, 1993, p. 595). Some of the focus group mothers felt they wanted to explain their answers on the depression and social support questionnaires. The page for comments was therefore placed immediately after those instruments in the survey package. Natural language that emerged in the focus group discussion was used in wording a short paragraph at the top of the comments page inviting mothers to provide explanations or descriptions of their "emotions or state of mind" or how they "cope" (Appendix E).

Unstructured data, obtained from 55 respondents (75.3%) support and add richness to the quantitative findings. Although many of the comments the mothers wrote were brief, half to one page in length, they were succinct and descriptive.

Fourteen (82%) of the women who had depression scores of ten and above provided written comments. Seventeen of the 21 mothers (81%) classified as having a history of depressive symptomatology wrote comments. Of mothers with low risk and no history, 31 (70%) percent provided comments. Six mothers whose survey results were negative for depression (either by EPDS score or history) described previous experience of a depressive episode.

Content Analysis

Content analysis was done to interpret the mothers' reports. Key descriptors,

words, terms or phrases and themes were identified. Categories were developed based on the themes. All of the data were coded according to the categories using line-by-line analysis. After waiting for a period of a few weeks the data were reviewed to reaffirm or revise the coding and categories. A second researcher experienced in content analysis reviewed the data. Seventeen themes were clustered into four over-arching categories with twelve sub-categories using the axial coding process described by Strauss and Corbin (1990). Each coded segment was identified according to the properties and dimensions of the respective category.

Content Categories

Categories that emerged are emotional reactions, social support, stressors and adjusting to circumstances. One thread that went across categories and created a link among them was that many mothers sought to explain or rationalize their emotional reactions based on their social network situation, their ease or difficulty adjusting to change, previous experience with motherhood, fatigue or other stressors.

Emotional Reactions

Mothers described their emotional reactions at the time of the survey as well as feelings of depression they experienced shortly after childbirth or at other times. These reactions varied greatly in quality and range, from mild to severe depressive features and from neutral to highly positive feelings. For some mothers the depressive feelings were pervasive and persistent. One mother, after describing her situation and feelings, wrote;

"this is a brief explanation of a very long, drawn out process". Another mother whose depressed mood began within a few weeks after childbirth wrote;

> I did feel very depressed and was on the verge of tears all the time it seemed....That was about the worst I ever felt. At my wits end....Finally, when [the baby] was 10-11 weeks old things started to even out.

Several mothers described fear because of emotions that they could not explain. When that was the case the mothers described the feelings as out of their control. Such feelings interfered with their ability to look after their children. For a few, their feelings tended to immobilize them, such as one mother who stated that her circumstances were "more than any sane person can handle...the other kids could destroy the house and I couldn't wake up". Another wrote, "One of the more difficult things I've experienced is the loss of concentration, memory and cognitive abilities. It was very frustrating and a bit scary to feel quite 'stupid' and not able to think." One mother whose depressive episode had resolved spontaneously by two months postpartum wrote;

> My depression lasted about 2 - 2 1/2 weeks...I could not get work done around the house, did not have time for my children and did not like to hear the baby crying....I am feeling a lot better, thank goodness! Being depressed makes you feel trapped and scared.

Some mothers felt confused and guilty about their depressive feelings, as exemplified by one mother's statement that she would, "get angry & frustrated" which caused her "to feel guilty which [fed] back into the anger creating a vicious circle." Another who described herself as anxious, weepy, sad and frustrated stated;

> I was happy that we had this perfect little baby, but at the same time I felt depressed and I didn't know why. I even felt guilty for feeling that way. I continued to feel overwhelmed and anxious. I also worried a lot about the health of my baby. Even though [the baby] was healthy I still worried & kept imagining something bad was going to happen.

This mother said her depressive episode was severe for a few weeks before beginning to resolve without treatment, but at eight weeks postpartum she still felt sad and overwhelmed at times.

Irritability and anger sometimes to the point of rage were reported. These were emotions that took mothers off guard more than any other experience. Some said that even though their partners were wonderful, they would "snap" at them or feel what they thought was unreasonable anger. While weepiness and "feeling down" were recognized as signs of depression, this was not necessarily true of anger. This was succinctly stated by one mother who wrote;

> I experienced great highs/lows associated with rage & despair during my depression. Diagnosis took longer because I didn't associate those emotional titles/feelings with post-partum depression.

Someone else commented that, "another surprising feeling was the sudden anger [she] could feel toward [her] husband for the smallest action or comment...and at times felt an intense anger."

For several mothers, moods alternated and they did not understand what was happening to them. One mother's comment particularly captured this lability as she called

it "my 'rollercoaster ride' of emotions: guilt --frustration--helplessness, etc." Some mothers stated that although they "had crying spells" or on some days felt they were "a real failure" or overwhelmed, on balance they thought they were "OK". Others felt, as one mother stated, that they were "coping okay - but could be better."

Mothers who had transient "baby blues" within the first two weeks after childbirth or previous depressions knew how these reactions felt and considered themselves fortunate to have escaped a more serious episode or a recurrence. A few mothers were surprised that they were emotionally buoyant despite problems or major events in their lives such as death and serious illness in their family. One woman who was close to a sister who had depression after childbirth had tried to determine why she, in very similar circumstances, had not. Comments reflecting such views were, "Amazingly enough I didn't feel any serious postpartum depression even though I had some problems", and " I consider my situation manageable and fortunate." Besides helping women to gain insight, in some cases previous experience equipped women with the ability to recognize depression and take action to deal with it. When they could exert control over their feelings then "things were easier".

Descriptions of positive feelings ranged from neutral or a moderate sense of being "OK" or "basically happy" to "elation" and "joy". A sense of wonderment was expressed by some at the depth of their happiness and the extent to which their lives were enriched by the addition of the new family member. One mother said she had not imagined the strength of the emotions she could feel as a result of having a child, and she "could not be happier". Many of these mothers also said they felt "lucky" and/or "blessed". Positive

feelings were reported with approximately the same frequency as depressive feelings but the descriptions were usually much less detailed.

Social Support

Descriptions of social support referred to the sources and the adequacy of the support available to them. Sources included the number and variety of supports in their network. Adequacy had to do with the accessibility and quality of the interaction. Quality of support was the nature of the interactions (negative or positive/helpful or unhelpful). Accessibility had to do with geographic distance and ready availability. Help was either offered and given before asked (also positive) or was given when the mothers asked. Asking for and receiving help was positive but not always. Some women experienced asking for help as extremely stressful. Partners, family and friends were mentioned in positive terms with equal frequency.

Mothers described numerous types of involvement by network members such as tangible aid (help with childcare and household duties) and emotional support. One mother wrote that "when he is fussing, all the relatives help take care of him". Many mothers said that they "needed a break". They were appreciative of the help that was offered which gave them some time away from the constant demands of home and children, however brief. For some mothers, having a break was important for their emotional balance. Others commented on the importance in terms of their family relationships, especially with their partner. One mother said that her parents and in-laws would "take the older children" to allow her and her husband to have some time "alone

together". Mothers often elaborated on how valuable this was. One woman stated, "my support group has really been important to me & without them I'm not sure how I could have managed so far. Having family close by has helped." Another mother described having had a prolonged visit from her mother and help from a close friend. She wrote;

> [I] also had the support of a super-duper friend who was there *every day* (original emphasis) helping with whatever needed doing - taking my 3 yr. old to the park, burping & rocking my newborn, or just having tea and conversation with me. She has truly been my angel from above.

Quite often it was emotional support more than practical help that was most needed and appreciated. Terms used to describe this were "encouraging", "supporting" and "understanding". One mother explained what a difference approval and support made to her.

> It helps to have people say the time spent with children is more important than the time spent doing housework....My husband is a big help...because he will tell me not to worry about things and will give me a hand...and he makes me feel better about myself.

Mothers who had older children who accepted the newborn found this to be a great asset. Some children were considerably older than this infant but not always, such as one woman who said of her pre-schooler that his help and attitude were "helpful for [her] wellbeing". Two mothers included pets as providers of unconditional emotional support.

Distance from network members was not always important, as emotional support

could be available in different ways. One mother wrote "even though my family members live far away we maintain meaningful contact." Other mothers were less fortunate when family did not live nearby; even though emotional ties were positive it was not enough. One woman stated that there was "nobody close by that I feel close enough to, to ask for help. My sister lives [in Ontario], and a phone call can only do so much."

In the case of several mothers, support was either not available or the people in their social networks had demands that added to rather than diminished their burden. One mother said that her "spouse was always away working, and [she] did not find anyone else too helpful", including her own mother. Another woman commented, "I'm doing everything for everyone else with no time to do anything special or even just have time to relax. I also feel...like I have to be strong for everyone else and that there is no one there for me." One mother, who expressed difficulty asking for the help she needed, wrote, "I think women should learn to feel it's OK to ask for help...I'm just now trying...some days that are very bad, to call up [relatives]". However, on days when she feels she is "a failure" she "won't call anybody & just keep it all in".

Some women in blended families had the care of step children with little recognition of the demands this placed on them. In one mother's situation, her partner was also rarely home. She wrote:

> I have step children from spouse's previous marriage and have them every second weekend. My husband works 6 days a week so this does add more work to my day. I don't get the feeling that I am appreciated for this extra work.

Two thirds of the comments about the negative effects of non-support or conflict in network relationships had to do with the women's partners. When mothers felt that their partner helped when and how they could, support was described in positive terms even though it was not always on hand. In contrast, when the husband was emotionally non-supportive, this was not only unhelpful, it created significant stress.

Effects of living in rural communities were not often remarked upon. One mother stated she felt more support in her present rural community than she had living in a city following the births of other children. Another mother commented that being in a rural area made no difference. A mother in a non-married partner relationship, however, felt stigmatized by "old time attitudes" that she encountered "in the country". She wrote that she felt people with such attitudes looked "down their noses" at her which caused her to be depressed at times. Although mothers travelled long distances for health care this was not usually described as a problem. Most mothers chose to travel but some did so unwillingly because of what they described as limited choice of health providers in rural areas. One mother even said she and her husband felt the care available to them was "unsafe".

Few mothers described accessing formal supports. When they did, however, more commented that they did not receive the support they sought than commented they were satisfied. One woman said that "Health Units are helpful...however being in a rural area most consultation is done by phone unless you make the effort to go into [the] office." Another mother commented that she could not afford to phone the health unit as often as she needed to because of long distance telephone charges. Some did not like having to

explain their concerns to different people each time they phoned. One mother wrote, "it was not always the same health nurse I spoke with which made things awkward. (didn't know my problems)."

Many mothers said they needed more support for a first child. This was not always the case. Some mothers felt they needed additional support learning to cope and care for more children and accompanying problems such as sibling rivalry. This help they said "should" be available from the health unit but did not believe that it was.

Several women reported that the birth and parenting experience enriched their lives and relationships with their partners, saying such things as it "further strengthened our family bonds", and "having a child has made my life more full and enjoyable....I could not be happier". Spiritual resources and religious faith were also very sustaining for some mothers, writing for example, "having a baby is a blessed event....children are a blessing from the Lord if we are faithful", and "I've been very fortunate...and I thank God every day. Another mother wrote, "God encourages us and strengthens us during difficult times....Life is not always 'a bed of roses'...but thanks be to God we always receive encouragement".

Stressors

A variety of stresses described by mothers could be classed into three types; fatigue, complications of pregnancy and birth, and other factors. Fatigue was the most common problem and was mentioned by mothers who were having difficulty emotionally as well as by mothers who were not. Other stressors were usually family circumstances,

typically a serious health problem unrelated to the pregnancy and infant, or conflicts in the support network.

Even though lack of sleep was difficult it was not necessarily associated with nor resulted in depressive symptoms. Mothers recognized that fatigue interfered with their mood and compromised daily functioning. The following excerpts were typical of many of the comments.

> I was definitely sleep-deprived....Lack of sleep seemed to intensify my sadness. (EPDS score: 6).
>
> Sometimes I would just cry, I was so tired...it really does get better, with a little bit of sleep. (EPDS score: 4).
>
> I was very short of sleep. At these times I felt it especially difficult to deal with a crying baby or a whining toddler. (EPDS score: 7).
>
> If I don't get enough sleep...I get short-tempered with my...two year old. (EPDS score: 0).

Complications of pregnancy and childbirth or related to the health of the newborn were very difficult for mothers, particularly when the consequences lasted for weeks and months. The burden of staying away from home because of the distance to necessary care added considerable stress. Most often this related to premature delivery and hospitalization of the newborn. Sometimes another illness required hospital care away from the home community. The following quote describes the impact felt by some mothers: "We live far away from [the urban centre where the baby was born]...and I was forced to stay in the city for an extended period...which increased my depression."

Following weeks of living with relatives many hours from home and at least two transfers of the baby to different hospitals, this mother stated she was still staying with family a long way from home and hospital. She went on, "I now drive two hours per day to visit my baby. I have been home twice since [the birth]. My husband visits...on weekends." Other disruptions within her family and pressure from her employer as a result of the long period away from home were additional factors in this situation. This mother had the highest of the survey EPDS scores.

Mothers in this study did not often comment on sources of support outside of their kin and friendship circles. A few reported seeking assistance from health providers. In some instances when the help desired did not materialize or meet expectations, that shortfall was very stressful. Mothers reported having difficulty initiating breastfeeding and other problems for which they received telephone support. They did not perceive this to be adequate. One mother stated that health unit nurses would talk to her on the telephone "but never made an effort" to see her and her baby in person. She reported several unsuccessful attempts she had made to get the help she needed. Although she eventually received help that enabled her to resolve her problems, it was not from the health care system. Another mother whose infant was in hospital stated that the early weeks were "very difficult" because she was "not the primary caregiver and felt like a failure as a mother". One mother stated that she felt unsupported by health providers (whom she named), especially when the infant subsequently developed a serious health problem. She felt that after over two months she had "learned the hard way" from her experiences.

Most frequently, stress in the support network arose from mothers' conflictual relationships with their partners. Five of the seven mothers who commented on partner relationship problems had EPDS scores of 14 to 18. Some mothers related these problems directly to the postpartum situation but others stated that longstanding issues were compounded by the additional demands brought about by the new baby. One mother wrote: "My husband and I have had 'many' more 'misunderstandings' and nit-picking arguments. Most stem from a difference in what we each see as priorities." Another woman said of her relationship, "We can't even have the most basic conversation - I am always met with disagreement or negativity." Mothers had most difficulty emotionally when there was lack of understanding of the increased physical and emotional demands placed on them. Husbands' comments or behaviour caused mothers to "feel useless and worthless" and under-appreciated. One mother of two very young children stated;

> I don't feel as though he does enough to help. I don't think he understands how hard it is to wake up 2 - 3 times a night and take care of 2..., or how hard some days have been, yet he still expects the house to be cleaned, dinner cooked and for me to be in a good mood and willing to make love.

Adjusting to Circumstances - Making Things Go Better

Mothers described numerous experiences related to the postpartum that had effects on either themselves or other family members. They also described processes and strategies that they engaged in to cope with these effects. Sometimes the passage of time was sufficient for mothers as they "got to know" their babies, older children accepted the

new member or mothers were able to restore some sense of control in their life or their routine. One mother wrote that she was usually a very organized person and had finally achieved some measure of organization again, which was "fine", as long as no crisis or unexpected event occurred.

Time was not always enough and mothers tried to identify or explain what was happening that resulted in emotional reactions or other problems. Based on this interpretation of their experience mothers sometimes named the problem or identified a solution or both. A recurrent theme was that they "needed a break" from the 24 hour demands. Many then tried to engage in strategies that would reduce the problem so they could "manage", "cope" or "make things go better". These strategies were usually what the mothers discovered by reflection and trial and error. Examples were going for walks, having tea with a friend and taking care of their own physical health. Adjusting priorities or reframing how they thought about their new situation was an important part of the adjusting process for several respondents. For some mothers this meant dealing with a real but unexpected sense of loss. One mother stated: "The first few weeks after giving birth were very difficult....my life as I knew it was gone." Other mothers wrote the following:

> My biggest problem was to accept things the way they are. So I have had to change my attitude - become more laid back, and not so anxious to have everything done like I used to, and just enjoy my baby while [it] still is one!
>
> Best mantra I've ever found to cope: 'I don't have to be Wonder-Woman'.

Once mothers could identify what was happening they seemed to be able to

marshal internal and external resources. For some mothers, help was available even before they asked. For others, learning to ask for help was an extremely difficult part of this adjustment. One mother learned that being assertive with visitors was helpful. Seeking outside help was successful for others. While reducing commitments was essential for some, other mothers stayed in the workforce or returned early because having something else to think about besides the baby was important. One wrote, "I think it helps me keep my sanity". After overcoming numerous difficulties, one mother stated she had become "a much wiser mother". She went on to say that she and her newborn had "gotten to know each other and [were] really enjoying being together."

Some statements implied that even though mothers could identify their problems such as "learning what it is like to love and care for two children instead of one", they had not yet found solutions. One mother wrote, "on top of everything else I felt guilty for not being as receptive to my older child as I used to be". She added that she felt she had lost the "connection" she had with the older child and also could not cope with "sibling rivalry, jealousy from the older child". A few strategies were dysfunctional or sub-optimal. Examples of these were magical thinking about relationship problems such as one mother who wrote that she tried to make her partner be like a former partner, which "wasn't working". Another woman wrote that she loved her partner but felt that he did not understand her needs or the infant care demands, and placed increased demands on her, so that she wished "that he'd just go away for awhile". One mother reported that she felt she had no confidant and would "cry sometimes, take some deep breaths and carry on."

Relationships Among Categories

Tentative patterns or interrelationships among content categories emerged from the unstructured data. When mothers experienced negative emotional reactions or other stressors, they actively sought an explanation. If this rationalization process was successful, it helped mothers find solutions or strategies to relieve the stress. Fatigue was the most common stressor and although difficult, in many instances it was one mothers found they could manage successfully. Fatigue affected mood but did not usually result in significant or persistent emotional symptoms.

Depressive symptoms were not necessarily related to poor partner support. When these reactions occurred and partner support was good, women described confusion and surprise, often guilt. However, the women at risk who had good partner support did not usually have high depression scale scores (typically 10 to 12). Breakdowns or conflict in the support network, usually with the partner, were associated with descriptions of persistent emotional strain and higher EPDS scores.

Few mothers sought help outside of their kin and friendship networks. There are no data about the reasons for this. For the few women who stated that they called on health providers for support, their efforts usually did not result in them obtaining the help they sought. Sometimes that experience contributed to emotional distress. Content categories and themes are summarized in Table 20.

Table 20.

Summary of Data Content Categories and Themes

Adjusting to Circumstances	Emotional Reactions	Social Support (sources, types, quantity, quality)	Stressors
effects on self	depressive features	partner support: positive / negative	fatigue
effects on family	positive feelings	other sources of support: positive / negative	complications with pregnancy & infant
processes & strategies	previous experience with depression	types of support: emotional / tangible	other major events or circumstances

Summary

Results of the data from the study are reported in this chapter and corollary statistical and content analysis. The 73 mothers who responded to the survey were 36% of eligible mothers in the RHA. Married mothers were significantly more likely to respond than single mothers or mothers in common law relationships. No differences were observed between respondents and non-respondents on the other health record variables. Mothers in the sample had a rate of depression risk of 23.3 percent. Method of infant feeding, previous history of episodes of depressive symptoms and the amount of social support perceived to be available from the mother's partner were observed to significantly affect the risk of depression. Breastfeeding appears protective. Partner relationship problems and depression history are positively correlated with risk. Educational attainment is related to method of infant feeding but not depression risk. This

may be because a relationship does not exist, or a relationship may exist but was not demonstrated because the sample size was not sufficiently large, adolescent mothers were excluded, the sample was not representative and/or there was insufficient variability. Entering the variables that were significantly related to the dependent variable, into a logistic regression, resulted in a good-fitting model that predicts the probability of risk of depression for this sample. Discussion of the findings is presented in the next chapter.

CHAPTER 6

DISCUSSION

> All happy families resemble each other, but each unhappy family is unhappy in its own way (Leo Tolstoy).

In this chapter the study is summarized and the overall findings are discussed and compared to current literature. Implications for nursing practice and suggestions for future nursing research are described. Limitations of the study conclude the chapter.

Depressive episodes are common in postpartum women but little is known about the prevalence of this problem and associated factors in rural Canada. The purposes of this study were to determine the proportion of women in the target population of rural mothers who are at risk for depression at eight weeks postpartum and to describe the relationship between social support and depression risk. Based on studies that show similar rates of depression in the general population between rural and urban settings in Canada, the prevalence of risk for depression in this study was expected to be similar to the rate reported most often for urban postpartum mothers (10 to 15 percent).

A descriptive cross sectional survey design was used. Pre-testing of the survey was done in a focus group interview with five rural postpartum mothers. Demographic data were obtained from the RHA health record for all eligible women. Seven variables were analyzed to compare respondent and non-respondent mothers. Seventy-three participants completed two structured questionnaires and a personal information sheet. Ten sociodemographic characteristics, eight social support variables and four mental health variables were analyzed and relationships to depression risk were assessed. Perceived partner support, history of depression and method of infant feeding were

correlated with depression risk. Using logistic regression analysis, a model was developed that accurately predicts depression risk over 82 percent of time in the population studied.

Response Rate

Seventy-three (36%) of 203 eligible mothers responded to the survey, which was a lower rate than expected. Although response rates for mailout surveys generally range from five to fifty percent (Bernard, 1994), the RHA had recently completed a study with a similar group of mothers and had a response rate of over 75 percent (P. Popko, personal communication, September 17, 1997). Zelkowitz and Milet (1996), Terry and associates (1996) and others who used the EPDS in mailout surveys also reported response rates between 75 and 97 percent. One reason for the lower rate may be that, in the case of the RHA, the survey was done specifically to obtain information about planning to improve services. Target populations have been found to be more interested in responding to surveys when people believe they will benefit as a result (Bernard, 1994).

Mothers in this sample may not have perceived that they would benefit as there is no direct service delivery relationship. In the other studies that obtained a high response rate with the EPDS, there was direct personal contact between the researchers and eligible mothers shortly after childbirth. Personal contact by public health nurses to explain about the study to the mothers was originally part of the study procedure. Had the plan not been modified, face-to-face contact may have helped increase the response rate, although it may also have resulted in variation in the way the study was presented. In future studies it may be important to ensure that personal contact occurs. This would require more

resources and time to increase the preparation of the RHA staff so that they feel more confident or more willing to assume such a role. A few weeks after the first surveys were mailed, a natural disaster occurred that affected approximately half the geographic area of the RHA. The situation continued for several weeks. A number of communities were evacuated one or more times. Others were put on evacuation alert for several days, sometimes more than once. Whether this affected the response rate is unknown.

Ethnicity

The sample was homogeneous with participants predominantly of Anglo-European descent. This RHA has an aboriginal population of at least 6 percent. Aboriginal mothers living off reserve and Metis mothers most probably were under-represented among study respondents. Except for the aboriginal population, the profile of ethnicity is consistent with census information that indicates the area has a low immigrant population, about half the provincial average, and that about one third of the residents are of British origin (Mental Health Services, 1995).

Travel to Health Care Services

Proximity to health services varies greatly in Canada. The following figures are based on 1993 Statistics Canada data (Ng, Wilkins, Pole & Adams, 1997). For the Statistics Canada study, travel was calculated in aerial distance which would compare reasonably closely to the time estimation used in this study. For example, up to five aerial kilometres would correspond to ten minutes or less travel time and as highway conditions are generally good in this RHA, 100 kilometres would require approximately 75 minutes.

Just under one quarter (23%) of Canadians live outside centres with populations of 10,000 or less. On average, these non-urban Canadians live 10.2 kilometres from their physician which would require approximately half to one third of the mean time travelled by the women in this study. Approximately 87 percent of Canadians and 83 percent of Albertans live five kilometres or less from their physicians. Nearly all urban residents (97.1%) but only 56 percent of rural residents live that close. Twelve percent of Canadians and 13.5 percent of Albertans live 5 to 25 kilometres away, and four percent live more than 25 kilometres from their physician; most (approximately 3%; 2% in Alberta) between 25 to 49 kilometres away. Less than one percent (0.6%) live more than 49 kilometres away. Of Canadians who see obstetricians and gynaecologists, approximately 62 percent live within five kilometres and only four percent live 100 kilometres or further from those specialists. Thus, a larger proportion of the mothers in this study had to travel greater distances to receive health care than even the average rural Canadian, and much more than urban Canadians.

Depression Risk: A Significant Problem for Rural Mothers

Depression risk was assessed with the EPDS which is a 10-item screening instrument. Possible response scores range from 0 to 30; the actual range in the study was 0 to 18. Prevalence was calculated using the EPDS score as a binary variable of low risk (0 to 9) and risk (≥10), based on the cutoff for community samples recommended by the developers of the instrument. That is, a score of 10 or more on the EPDS indicated risk of depression and was the dependent variable. The risk group was further broken down to moderate (10-13) and high (≥14) risk.

Mothers at risk for depression comprise 23.3 percent of this sample which was more than expected. In Canadian (Zelkowitz & Milet, 1996) and British studies (Cooper, Murray, Hooper & West, 1996; Whitton, Warner & Appleby, 1996) conducted in the early 1990s using the EPDS, the prevalence of depression risk at six to eight weeks was estimated as 5.7, 13 and 15.3 percent respectively. When the subset of high risk mothers is examined, results are more similar. Warner and associates (1996) report that in a community sample of approximately 3000 urban mothers, 11.8 percent scored above 12 on the EPDS. In the present study, 13.7 percent (10 mothers) scored in that range which corresponds with 13 percent in a study in which mothers with EPDS scores of 13 or more were classified as having severe dysphoria (Hannah, Adams, Lee, Glover & Sandler, 1992. A response rate of 51 percent was reported for one study (Zelkowitz & Milet), and 80 percent, 79.8 percent and 56.5 percent respectively by Cooper and associates, Warner and associates, and Hannah and associates.

Family income, maternal age, employment, educational status, gravidity, gender of the infant, distance to health care providers and living location were not correlated with depression risk. This is in concordance with most findings in postpartum studies (O'Hara, Neunaber & Zekowski, 1984; Stein, et al., 1991). Taylor (1989) found no relationship between EPDS score and age or parity. In contrast, Gotlib and associates (1989) report that younger maternal age, lower education and unemployment were associated with depression. In another study, unemployment by the mother and/or her partner was associated with EPDS scores above 12 but that the reason for the realtionship was unclear (Warner, et al., 1996). The researchers offered the explanations that mothers without employment contacts may be more isolated socially, that depressed women may

not seek employment and/or that unemployment was independently related to depression because of the negative psychological effects of economic adversity. Adolescent mothers were excluded from the study which may be the reason findings did not reflect real age and educational differences that may exist between adult and younger postpartum mothers. In the present study there was no relationship between depression and family income (partner employment was not assessed), maternal employment, or social support in general. The majority of employed mothers did not rate work associates in their support networks. Thus, the explanations posited by Warner and associates do not seem plausible for this group.

In a study of a convenience sample of 77 mothers who were recruited from an intervention program for postpartum mothers (Healthy Beginnings) in a city in Alberta, 29 percent scored 10 or more on the EPDS (Akgungor, et al., 1997). As in the present study, these authors state that none of the demographic variables from the health records such as maternal age, marital status and gravidity were correlated with depression scores. Fewer of the urban mothers were breast feeding (68%) compared to 80 percent of the rural mothers. Only half of the mothers at risk in the urban study were asked about depression history, but of those, eight (72.7%) reported previous depression. That particular group, by virtue of having been selected for an intervention program, may have personal and/or socioeconomic characteristics that place them at increased risk, compared to the community sample in the present rural study.

Use of an instrument such as the EPDS to screen for risk of depression provides an estimation of possible cases and cannot be considered diagnostic. The EPDS does not include a comprehensive list of depressive symptoms and does not substitute for clinical

assessment. Applying a cutoff score of 9/10 may result in false positives, that is, mothers may be identified as at risk who are symptomatic but on thorough assessment may not be clinically depressed, may be sub-threshold, experiencing minor depression or an adjustment disorder. Conversely, there may be false negatives, mothers who are depressed but scored less than 10 on the EPDS, in part because of the small number of symptoms assessed. Three mothers with scores below the cutoff reported some thoughts of self-harm. It is possible that on assessment they may be found to be depressed. One other mother with a score of 9 described in her comments a history of depression and strategies that she worked consciously at every day to maintain her mental health. Two additional mothers with scores below 10 were receiving some form of mental health treatment (counselling or medication) at the time of the study; one for adjustment problems and one for a chronic mental health problem. Mothers who are seriously depressed may have been unable or unwilling to respond. One of the mothers in the focus group stated this would have been her situation, which is similar to what has been observed in depressed medically ill patients (Davis & Janzen, 1988).

Several mothers wrote comments about symptoms such as anger and concentration and memory problems which are not assessed on the EPDS. This is consistent with Beck's (1995) findings that lack of concentration was a common theme among depressed postpartum mothers. Mothers in this sample also described what Beck summarized as "loss of control...loss of self" (p. 310). Experiencing feelings of loss and sadness was surprising and confusing to these women, which contributed to their distress.

Married mothers were over-represented in this study and all the unmarried mothers had partners. High partner support score was strongly negatively correlated with

depression risk. It is possible that single mothers who did not respond did not have partners, in which case they may be at higher risk. In a study of social support and affective disorder in pregnant mothers, Norbeck and Anderson (1989) observed that marital status was a significant predictor. Hall and associates (1991) report that the 225 single postpartum mothers in their study had a high prevalence of depressive symptoms, with 59.6 percent classified at serious risk. Mothers at risk in the latter study reported fewer social resources than the mothers with low depression scores.

Depression is known to be poorly reported and often not detected by health professionals in the postpartum period (Cox, Connor & Kendall, 1982; Illingworth, 1989; Janzen & Stewart, 1990) as well as in the general population (Beaudet, 1996; Bland, Newman & Orn, 1988). Although several mothers in the risk group in this study had previous experience with depressive illness and some had previous treatment, only one was receiving treatment for symptoms at the time of the survey. Reasons this mother described as leading to intervention for mental health concerns, although contemporaneous with her pregnancy, were not believed by her to be related. Narrative comments indicated that many of these mothers experienced considerable distress with their symptoms. What seemed surprising in these results was why, particularly for those who had been previously treated, they had either not reported their symptoms or their health providers had not recognized the problem. Comments from focus group mothers suggest a possible explanation. All of the focus group mothers expressed great reluctance to share with health providers their feelings of inadequacy, anxiety or sense of being unable to cope. These mothers shared a fear of being labelled as inadequate mothers. Even though none reported believing they had been given such a label, they felt

extremely vulnerable, and it was a risk they did not want to take. Data were not collected regarding whether women in the study had reported symptoms and if not, why they had not done so. Further study to determine why women do not report symptoms and what might assist them to report will be important in planning intervention strategies that support their wellbeing and do not add to feelings or inadequacy and guilt.

Hays and associates (1995) report that in a followup study of adult patients, persistent functional limitations were greater than expected for depressed individuals and greater than limitations experienced by people as a result of chronic medical problems. This was true regardless of the severity of depression, "even to patients with depressive symptoms but no depressive disorder" (Hays, et al., p. 17). Additionally, these authors state that about one fourth of persons who had sub-clinical depression at the outset developed major depression during the their study. Screening that will detect even mild or sub-clinical cases as well as major depression is important in terms of minimizing morbidity and possible long term effects for mothers.

Depressive Symptoms

Most of the mothers in the study reported some anxiety or depressive symptoms. Only three mothers had an EPDS score of zero, three had a score of one and five had a score of two. Low scoring mothers were most likely to report symptoms of excessive worry and anxiety (11), self-blame (17) and feeling unable to cope (12). A few reported depressive affect (3), feeling sad (2) or crying (5). This is not surprising as childbirth and transition to parenthood are major and stressful life transitions. Population studies show that at any point the majority of the population has a small number of depressive

symptoms (Boyd, Weissman, Thompson & Myers, 1982; Gotlib, 1984). Numerous studies demonstrate a strong correlation between depressive and anxiety symptoms and it is difficult or impossible to differentiate between self-reported depression and self-reported anxiety, particularly in mildly affected individuals (Gotlib). Although it is reasonable to expect mild affective symptoms in postpartum mothers it is not reasonable to expect that symptoms sufficient to indicate depressive illness or substantial risk of such illness is usual or benign for postpartum mothers. Seventeen affective symptoms were reported by the mothers. The symptoms correspond to symptoms reported in the literature as common in depressed postpartum women (Table 21).

Nearly one quarter of mothers in the study are at risk, a rate that corresponds to the lifetime risk for women in community surveys (Beaudet, 1996; Newman, et al., 1988). Reasons for this higher than expected prevalence are unclear. As this sample was not representative, the rate of depression risk for diverse groups of rural postpartum women is unknown. Further research is needed to determine whether rural postpartum mothers in general are at increased risk compared to their urban counterparts.

Table 21.

Symptoms Common in Depressed Postpartum Women

Symptoms Reported in the Literature	Identified by study mothers	Symptoms Reported in the Literature	Identified by study mothers
feeling tense, anxious, on edge	✔	anger	✔
obsessive or compulsive thoughts		irrational fear, guilt,	
irritability, labile mood	✔	self-reproach	✔
helplessness, sense of insecurity	✔	depersonalization /	
feelings of worthlessness	✔	detachment	✔
apathy, feeling emotionally flat		anhedonia and loss of libido	
overeating or anorexia		hopelessness , despair,	
indecisiveness		despondency	✔
excessive worry	✔	loss of energy, lethargy,	
thoughts of self-harm	✔	fatigue	
thoughts of harming the infant		decreased concentration,	
feelings of inadequacy, inability to cope	✔	mental 'fogginess'	✔
		poor sleep,	
tearfulness	✔	difficulty falling asleep	
sadness or dysphoria	✔	excessive sleeping	✔
impaired memory	✔	extreme concern for or lack of interest in or attachment to the infant	✔

Sources and Amount of Social Support

Social support scores in this study correspond to scores in pooled data for 1067 healthy women (Table 22), except that 32.9 per cent of the study sample experienced loss compared to 44.1 percent of the pooled sample subjects (Norbeck, 1995). On average the women in this study were 28.2 years of age compared to 45.5 years in the pooled sample. Other differences are that all of the postpartum study mothers are partnered compared to 40.5 percent of the pooled sample, and nearly all of the mothers in this study are Caucasian compared to 78.6 percent of the pooled sample.

Table 22.

Social Support Scores of Study Mothers Compared to Normative (pooled sample) Data

Variable	Normative (pooled) Sample n = 1067 Mean (SD)	Postpartum Study n = 73 Mean (SD)
Age	45.5 (21)	28.2 (4.7)
Number of support persons	10.9 (5.9)	10.1 (5.14)
Emotional support score	127.2 (72.7)	128.1 (71.2)
Tangible support score	53.1 (33.4)	53.7 (31)
Total network	98.5 (53.8)	95.75 (47.21)
Total functional support score	179.4 (102.1)	182.1 (99.6)

The extent to which a person is integrated into a social network and the amount of support perceived to be available from others in that network is reported to influence a variety of health outcomes (Bloom, 1990), parenting behaviour (Hall, et al., 1991; Norbeck & Sheiner, 1982) and family functioning after childbirth (Mercer & Ferketich, 1990). The mean number of support persons for mothers in the study was 10.1, and 10.9 in the pooled sample. Although the NSSQ prompted mothers by listing several different groups of support persons they might include, the postpartum study respondents listed a restricted range of network members. Ten different categories of support were listed but few mothers named persons beyond family and friends. Only nine mothers named more than three categories; four mothers named five or six categories and five listed four categories. Even for those mothers the amount of support available from non-kin, non-

friend sources was proportionately small. Most support (65%) was provided by family which included a wide range of close and distant extended family such as grandparents and cousins. Significant friends provided one quarter of the support.

Somewhat surprising was that although mothers have frequent perinatal contact with health providers, less that five percent of support was attributed to these sources. There was also no indication that mothers who had infants with health problems received more support from health professionals, however the numbers are too small to form any conclusion. In contast, a study of postpartum Sikh mothers in Edmonton showed that those mothers used professionals for advice more than they used extended family (Nankpi, 1994).

In a study of rural older persons Wenger (1991) reports that smaller networks that were kin-focused were less supportive that wider community focused networks. Wenger developed a typology of five network support types. These were described as family-dependent with close family and few other relationships; locally integrated with close local family, friends and neighbours; local self contained with infrequent kin contact; wider community focused, including distant relatives and significant friends; and private restricted, with minimal contact with anyone except a spouse. Most of the mothers could be classified approximately equally into Wenger's family dependent, locally integrated and community focused categories. A small number could be classed as having a private restricted network with their spouse, no other kin and minimal contact with others. No mothers fit Wenger's category of locally integrated networks where reliance is primarily on neighbours. Neighbour support was minimal, at less than three percent.

Women caregivers of adults and children with health problems were described by

Fudge (1995) as having networks that were diverse, semi-diverse or kin focused. According to Fudge's typology, women in this study would be approximately equally divided between kin-focused (8 members or less) and semi-diverse (9 to 14 members) networks. Thirteen mothers (17.8 %) had 15 to 24 support persons but they were nearly all family and friends. Few if any mothers could be described as having a diverse, rich network with more than fifteen support persons from multiple categories (Fudge). In contrast to Wenger's and Fudge's findings, the size and diversity of the mothers' networks did not correspond to the amount of support provided. Mothers with small networks tended to have frequent and supportive contacts with people who made them feel loved and respected. This is also different from the results of the study of Punjabi Sikh mothers in Edmonton in which there was a significant positive relationship between the size of the available social network and the mothers' psychological wellbeing and satisfaction with their own health (Nankpi, 1994). It appears that in respect to support networks, the second generation (or more) postpartum Canadian mothers in this study were unlike their counterpart immigrant postpartum mothers. Postpartum Sikh mothers and older women and women caregivers had more diverse networks and made more use of professional supports. This may be because, unlike the Sikh mothers whose extended families are not in Canada, most of the mothers in this study had supportive kin networks nearby.

According to social integration theory, persons who have a broad social network of supportive people are better able to cope with stressors. However, the sources and types of support that mitigate the negative effects of stressful life events vary with the nature of the event and the social or cultural context. Israel, Hogue and Gorton (1984) and

Walker, McBride and Vachon (1971) report that larger, more varied networks with weaker ties may be more beneficial in crisis situations and smaller, but more close-knit networks do more to enhance psychological wellbeing. Childbearing does not typically present a crisis for mothers, thus findings of the present study lend support to the latter premise.

Social Support and Risk of Depression

The major purposes of this study were to determine the relationship between social support and depression risk and whether there were relationships with other of the selected variables. Of seven social support variables, although mothers with greater partner support had larger networks and more total support, only the amount of support a mother perceived to be available from her partner was associated with depression risk. These data correspond to the findings of Norbeck and Tilden (1983) that total emotional and tangible support as measured by the NSSQ were not significant predictors of emotional state in pregnant mothers. Findings that poor spousal support is a risk factor for depression in postpartum mothers are reported in several studies (Cutrona, 1984; Cooper, Murray, Hooper & West, 1996; Demyttenaere, et al., 1995; O'Hara, 1986; Terry, et al., 1996; Whiffen, 1988; Zelkowitz & Milet, 1996). All of the mothers in this study were partnered and all reported some partner support, with scores ranging from 12 to 24. Relatively small differences in partner support were significant. On the other hand, there was no relationship between depression risk and support from women's mothers even though a few of the women had no support from their mothers and the scores for that scale ranged from 0 to 24. Data in this study do not support the findings by Matich and

Sims (1992) that the relationship with, or support from, a woman's mother affects her depression risk. Although women who lived further from health providers received more support from their mothers, these factors were not related to depression risk. There was no relationship between the amount of support from the woman's partner and her mother. Presence of a partner was related to the mother's emotional outcome in this sample. These findings lend support to the view that specific rather than global support is beneficial and is dependent on the nature of the situation (Cutrona, 1986; Norbeck, 1985).

Postpartum mothers in intimate relationships that are not supportive are more likely to have depressive symptoms. Women may have certain expectations of their partner and if support is not congruent with these expectations, emotional stress or conflicts occur. There were no unpartnered mothers in this study. Therefore, there are no data to determine whether available sources of support other than the partner would make a difference for single mothers.

Depression History and Postpartum Risk

Previous history of depressive symptoms was strongly correlated with risk of depression at eight weeks postpartum. This is consistent with other in studies in which risk of developing depression is increased in people who have had one or more previous episodes (Beaudet, 1996). Anxiety or depressive symptoms during pregnancy, following previous deliveries and at other times were predictive of depression at six to eight weeks postpartum in a large community study (Cooper, Murray, Hooper & West, 1996). In that study, previous postnatal depression was particularly significant. Although that was not observed in the present study, the sample size was small and the data were collected by

survey. Clinical assessment provides a more reliable history. Laizner and Jeans (1990) report that mothers in their study who had stable personality traits of anxiety, depression and hostility were significantly more likely to be depressed postpartum. High depressive coping and high trait anxiety also predict depression in pregnant and postpartum mothers (Demyttenaere, et al., 1995).

Depression history was also correlated with low partner support. This is consistent with findings that a close, warm relationship or few tensions between a woman and her partner was negatively correlated with depression (Cooper, Murray, Hooper & West, 1996). The correlation between negative partner relationship and previous postnatal depression in their study was significant ($f(u) = 4.57$, $df = 1$, $p < 0.05$). In another study, mothers' perceptions of poor partner support were correlated with depression risk as assessed by the BDI during pregnancy ($r = 0.33$, $p = 0.05$) but not at six weeks or six months, although it approached significance at six months ($r = 0.28$, $p = 0.06$) (Demyttenaere, et al., 1995). Coping style in the latter study was predictive of depression at six months but not at six weeks postpartum (r squared $= 0.41$, $F = 2.92$, $p = 0.01$). The authors attribute this to the fact that mothers saw their physicians regularly at six weeks but by six months that support was no longer regular or frequent, which is unlike the present study in which mothers reported very little support from physicians at eight weeks. Although coping style is related to vulnerability to depression, actual history of symptoms or episodes of depression may be a more accurate predictor of developing symptoms earlier in the postpartum period. Another possible explanation is that mothers who chronically have higher depressive coping styles may have higher expectations of their partner, and thus evaluate the available suppport as insufficient compared to mothers

with more effective coping styles who are more satisfied with what might be similar levels of support (Demyttenaere, et al.).

Lack of adequate partner support or a conflictual partner relationship may also have contributed to previous depression. Two mothers in the focus group who had different partners with previous pregnancies stated that the quality of their relationships made a substantial difference to how they felt emotionally and they believed that poor support had contributed to feelings of depression and low self-esteem. Written comments by some of the study mothers also indicated that poor partner relationships prior to childbirth continued through the postpartum and compounded by the demands of pregnancy and the new infant, caused increased stress and depression. It remains unclear whether poor quality partner relationships are a cause or result of affective symptomatology, however, mothers who experience depression are more likely to believe their partner is unsupportive.

Method of Infant Feeding, Depression Risk and Partner Support

Eighty percent of the mothers in this study were breastfeeding at eight weeks postpartum and an additional five percent had breastfed for a short period. This is a high rate of breastfeeding compared to 37 percent in a study reported by Warner and associates (1996) and 68 percent reported in an Edmonton survey (Akgunkor, et al., 1997). Breastfeeding mothers were significantly less likely to be at risk of depression, which is consistent with findings reported by others (Warner, et al.; Akungkor, et al.; Hannah, et al., 1992). Conversely, Alder and Cox (1983) report increased risk in breastfeeding mothers, which they attribute to endocrine changes. Laizner and Jeans (1990) also report

that breastfeeding primiparous mothers were more likely to have depressive symptoms. The latter is a small study of 27 mothers some of whom were multiparous women for whom there was no significant relationship between feeding method and depression. Harris and associates (1996) found no support for a relationship between progesterone levels and mood at six weeks postpartum. Whether there is a causal relationship is unclear. Hormone levels associated with breastfeeding may exert a protective physiologic effect, or it may be that neurohormone levels associated with depression may negatively affect the mother's desire and/or ability to breastfeed. Warner and associates suggested that depression may cause a mother to be discontented with her maternal role and be less persistent in breastfeeding or conversely that successful breastfeeding enhances self-esteem thus reducing depression. It is also possible that the actual relationship is a complex combination of several physical and psychological factors. In some studies of postpartum mothers (McIntosh, 1993) a relationship is reported between education and method of infant feeding. Advanced education was related to breastfeeding in this sample. The sample size was small and as there were very few mothers with less than high school education there was insufficient variablity in the sample. This finding must therefore be interpreted with caution.

Infant feeding method was not related to partner support, in contrast to the findings of a study of married Anglo-American mothers in which emotional support from the mother's partner played a small role (Matich & Sims, 1992). Women's pre-existing beliefs about breastfeeding may be more predictive of their behaviour than social support (Dusieker, et al., 1985). It may be that if the mother's decision to breast or bottle feed is not supported by her partner, rather than altering her choice the difference is perceived as

conflict or perceived lack of support, which results in or contributes to feelings of anxiety or depression.

Depression history and infant feeding were not correlated. All of the women who had previous history but whose EPDS scores were below the cutoff were breastfeeding at the time of the study. It may be that these mothers would be at increased risk of becoming depressed at the point at which they stop nursing. Since new cases of depression develop throughout the year after childbirth it is important for caregivers to continue to be alert to situations in which mothers may be at increased risk.

Conclusion: A Preliminary Predictive Model

In summary, nearly a quarter of rural mothers in this study are at significant risk of depression. Although many reported in the survey that they were aware of and distressed by their symptoms, few if any mothers sought support of health care professionals. Factors relating to depression risk are poor partner support, history of depression and bottle feeding. Partner support and depression history are intercorrelated. Bottle feeding was independent of history and partner support but together are highly predictive of risk for depression. Directionality of the relationships are unknown. A model that includes these characteristics is shown to accurately predict risk of depression over eighty percent of the time.

It is important to know that the characteristics in the predictive model appear to cut across socioeconomic groups, at least in the postpartum period. Affluence and education are not protective as is often observed in relation to health problems. There will always be some mothers who will not be depressed despite what might appear to be her

poor circumstances and vice versa. As demonstrated by the characteristics of the proportion of women who did not 'fit' the model at eight weeks, each mother and each family has their unique situation. Mothers' needs must be individually assessed, but models and assessment instruments if used correctly as guides can increase detection of symptoms in a number of women whose depression may otherwise remain hidden. Continued systematic data collection would provide useful information for ongoing service planning and extend knowledge about other groups not included in the present study.

Significance of the Study in Relation to Nursing

In North America including Alberta, public health nurses have a major role in promoting maternal and infant health and facilitating mothers' development of knowledge and skills and adaptation to the maternal role. The focus includes the family as a unit, integration of the infant into the family, and the well-being and adjustment of all family members (Health Promotion Directorate, Health and Welfare Canada, 1989). Because the first several weeks and months after delivery is a period of vulnerability, health outcomes of women and infants have important short and long term implications. The significance of this study is that it increases our knowledge and awareness of the problem of depression in postpartum women in this rural community setting. Information from the study increases our understanding of the factors associated with depression in this population as well as factors that may be protective. The three varibles found to be highly predictive of risk are possible to identify through careful history-taking by nurses and other primary care health professionals.

Public health nurses can systematically screen and assess for depression and risk factors, including previous depressive episodes and relationships that affect wellbeing, in particular the relationship between the mother and her partner. Clinicians must not make assumptions that being married or having a partner is an indication of availability of support. Those relationships may be conflictual and contribute to emotional distress. Further study is needed to determine the nature and effects of support networks of unpartnered mothers.

Results of the study contribute to our knowledge of the usefulness of the EPDS in assessing risk for depression in a rural community setting. No problems were observed with the EPDS as a self-report instrument in the study or in the focus group that preceded the study. This instrument could be clinically useful, but validation studies are needed to determine how accurately EPDS scores predict clinical depression, compared to other assessment and screening instruments and actual assessment.

Mothers in this sample are similar to the majority of mothers in many rural communities in Alberta. Numerous questions remain unanswered, however, particularly about groups that were not represented in the study and whether rural mothers have a different level of risk from their urban counterparts. Larger studies are needed as well as studies that examine strategies to improve case finding and postpartum care. Qualitative studies will be important to learn about the types of support that mothers would accept and which would be effective in mitigating postpartum depression. Nevertheless, findings from the study support the view that depression in the postpartum is a frequent occurrence in this population and emphasize the importance of more extensive research. Those responsible for planning and for determining health care policy need to understand

the extent to which postpartum women in this environment are affected by depression. This will help them to develop services that are accessible, appropriate, and cost-effective (Cordes, 1989; Weinert & Burman, 1994).

Limitations of the Study

There are several limitations of this study. First, there are issues of sampling. Convenience sampling limits generalizability of results. Sample size was small; approximately two to three times as many respondents are needed to achieve a 95 percent confidence level in descriptive study of this nature (Hulley & Cummings, 1988). There was no provision in this study to obtain a stratified random sample to ensure that small groups within the population were included, and populations at particular risk may not be represented, which further reduces generalizability. First Nations mothers were not included primarily because of living location. The sample also excluded mothers under the age of 18 years and mothers who do not read English. Given the demographics of the area, Metis and single mothers were under-represented. Much needs to be known about these and other mothers who did not respond.

Secondly, there is the issue of other variables that are not included. Except for gender and date of birth, information about the infant was not included in this study. Factors such as infant temperament that may affect the sense of self-efficacy or emotional wellbeing of the mother were not accounted for (Cooper, et al., 1996; Murray & Cooper, 1997; Tulman & Fawcett, 1990). Data collection took place in the spring and summer. There may have been seasonal effects on the subjects that are different from other seasons. Variables such as personality, labour and delivery experiences and health factors

that were not measured may affect women and their responses.

The third type of limitation is inherent limitations in the measurement tools. The survey instruments in this study have been used in similar populations and found to be valid, but assessment of psychometric properties is limited. No studies were found where these instruments were used together, where the NSSQ was used in Canada, or where any of the instruments were used in rural populations in North America. Depression and social support are complex constructs which the existing instruments are unable to measure with precision. In an undeveloped area of research such as this it is common for measurement to be imprecise (Cohen, 1988).

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APPENDIX A

Edinburgh Postnatal Depression Scale **Code No.**_____

Baby's Date of Birth:_____ **Today's Date:**_____

HOW ARE YOU FEELING?

As you have recently had a baby, we would like to know how you are feeling now. Please **circle** o the answer which comes **CLOSEST** to how you have felt **IN THE PAST 7 DAYS, NOT JUST HOW YOU FEEL TODAY.**
Here is an example, already completed:

I have felt happy:
- ❒ Yes, most of the time
- ❒ Yes, some of the time
- ❒ No, not very often
- ❒ No, not at all

This would mean: "I have felt happy some of the time" during the past week. Please complete the other questions in the same way.

IN THE PAST SEVEN DAYS:

1. I have been able to laugh and see the funny side of things:
   - ❒ As much as I always could
   - ❒ Not quite so much now
   - ❒ Definitely not so much now
   - ❒ Not at all

2. I have looked forward with enjoyment to things:
   - ❒ As much as I ever did
   - ❒ Rather less than I used to
   - ❒ Definitely less than I used to
   - ❒ Hardly at all

3. I have blamed myself unnecessarily when things went wrong:
   - ❒ Yes, most of the time
   - ❒ Yes, some of the time
   - ❒ Not very oten
   - ❒ No, never

4. I have felt worried and anxious for no very good reason:
   - ❒ No, not at all
   - ❒ Hardly ever
   - ❒ Yes, sometimes
   - ❒ Yes, very often

5. I have felt scared or panicky for no very good reason:
   - ❒ Yes, quite a lot
   - ❒ Yes, sometimes
   - ❒ No, not much
   - ❒ No, not at all

6. Things have been getting on top of me:
   - ❒ Yes, most of the time I haven't been able to cope at all
   - ❒ Yes, sometimes I haven't been coping as well as usual
   - ❒ No, most of the time I have coped quite well
   - ❒ No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping:
   - ❒ Yes, most of the time
   - ❒ Yes, sometimes
   - ❒ Not very often
   - ❒ No, not at all

8. I have felt sad or miserable:
   - ❒ Yes, most of the time
   - ❒ Yes, quite often
   - ❒ Not very often
   - ❒ No, not at all

9. I have been so unhappy that I have been crying:
   - ❒ Yes, most of the time
   - ❒ Yes, quite often
   - ❒ Only occasionally
   - ❒ No, never

10. The thought of harming myself has occurred to me:
    - ❒ Yes, quite often
    - ❒ Sometimes
    - ❒ Hardly ever
    - ❒ Never

Source: Cox, J.L., Holden, J.M., & Sagovsky, R. (1987). Detection of postnatal depression: Development of the Edinburgh postnatal depression scale. British Journal of Psychiatry, 150(6), 782-786.

APPENDIX B

Letter of Permission to Use the EPDS

mailbox/C%7C/Program%2...y.demon.co.uk&number=12 mailbox/C%7C/Program%20Files/Netsc...00Z-989@rcpsy.demo

Subject: Edinburgh Postnatal Depression Scale
Date: Wed, 17 Sep 1997 11:33:00 +0100
From: Dave Jago <djago@rcpsych.ac.uk>
To: "vegactsr@agt.net" <vegactsr@agt.net>

Dear Ms Leraand

Thank you for your letter of 5 September. We are pleased to grant you permission to make copies of this scale for use in your study as described. Please note that this permission does not extend to publication of the scale in any papers describing your work, for which separate permission would be required. You may of course reproduce the scale in your thesis itself if you wish.

Dave Jago
Head of Publications Services
The Royal College of Psychiatrists

APPENDIX C

Letter of Permission to Use the Norbeck Social Support Questionnaire (NSSQ)

Request Form

I request permission to copy the 1995 revised version of the Norbeck Social Support Questionnaire (NSSQ) for use in research in a study entitled:

Social Support and Depression at Eight Weeks Postpartum in Mothers in Rural Alberta

I am aware that the revised 1995 Scoring Instructions should be used with this version of the NSSQ.

Gloria G. Lerand October 14/97.
Signature of Investigator Date

Gloria G. Lerand
Typed or Printed Name of Investigator

Student, Master in Nursing Program
Position

University of Alberta
Institution

3-134 Clinical Sciences Building
Address

Faculty of Nursing
University of Alberta
City, State, (Country), ZIP Code

Edmonton, AB, Canada, T6G 2G3

Permission is hereby granted to copy the NSSQ for use in the research described above.

Jane S. Norbeck
Jane S. Norbeck

October 17, 1997
Date

Please send or fax two signed copies of this form to:

Jane S. Norbeck, RN, DNSc
Professor and Dean
School of Nursing, Box 0604
University of California, San Francisco
521 Parnassus Avenue
San Francisco, CA 94143-1604
FAX: (415) 476-6707

APPENDIX D

Health Record Summary Sheet							
Code No.	Infant DOB	Type of Delivery	Location of Birth	Mother's Age	Gravida	Marital Status	Infant Gender

APPENDIX E

Mother's Personal Information Sheet Code No._____

Please complete the following questions.	
1. Do you live 50 kilometres or more from a city (10,000 population or more)? ❒ yes ❒ no	6. Circle the highest level of education that you finished: school grade 6 7 8 9 10 11 12 trade/vocational 1 2 3 college/technical institute 1 2 3 4 university 1 2 3 4 5 6 7 +
2. Are you living: ❒ on a farm ❒ an acreage ❒ in a village or hamlet ❒ in a town ❒ other, please specify_____	7. What is your cultural background? (For example, French Canadian, Metis, German) _____
3. About how long (hours & minutes) does it take you to travel to: __:__ doctor's office __:__ nearest health unit office __:__ obstetrician or other specialist if you saw one for this pregnancy, or are currently seeing one __:__ hospital/health centre that you usually use Please name the hospital/health centre: _____	8. Are you: ❒ working ❒ employed but on leave of absence (intending to return to work) ❒ worked until the birth of this baby but not planning to return to work ❒ homemaker full-time/not employed in past two years or more ❒ other, please specify _____ _____
4. At present, are you: ❒ breastfeeding only ❒ bottle feeding only ❒ mainly breastfeeding with bottles sometimes ❒ mainly bottle feeding with some breast feedings	9. What is your best estimate of your household income this past year? ❒ $19,999 and below ❒ between $20,000 and $39,999 ❒ between $40,000 and $59,999 ❒ between $60,000 and $79,999 ❒ $80,000 or more
5. If you breastfed but now bottlefeed your baby, how old was your baby when you stopped breastfeeding? # weeks_____	10. Are you receiving some form of treatment for depression or other mental health problem at this time? ❒ yes ❒ no

Mother's Personal Information Sheet Code No.

Page 2.

11. **Before you got pregnant with this baby**, was there ever a period of 2 weeks or more when you felt sad, "blue", depressed and / or anxious most of the time?
❒ yes ❒ no
Circle ❒ all that apply in the list below if you also had other concerns **at the same time**, such as:
❒ trouble sleeping
❒ large increase or decrease in appetite
❒ not able to concentrate
❒ feelings of worthlessness or hopelessness
❒ irritability
❒ did not enjoy things that you usually enjoy
❒ no energy
❒ thoughts of harming yourself and / or thoughts of death
❒ other,

If "yes", did you see a counsellor, doctor, or some other health professional?
❒ yes ❒ no

12. **When you were pregnant with this baby**, was there ever a period of 2 weeks or more when you felt sad or "blue", depressed and / or anxious most of the time?
❒ yes ❒ no
Circle ❒ all that apply in the list below if you also had other concerns **at the same time**, such as:
❒ not able to concentrate
❒ feelings of worthlessness or hopelessness
❒ irritability
❒ did not enjoy things that you usually enjoy
❒ thoughts of harming yourself and / or thoughts of death
❒ other,

If "yes", did you see a counsellor, doctor, or some other health professional?
❒ yes ❒ no

Mother's Personal Information Sheet Code No._____

Many things on a day-to-day basis such as relationships, baby fussing, lack of sleep, etc. can affect a mother's emotions or state of mind, or how she is coping. Sometimes people feel as though answering questions with a tick mark does not really explain very well how they think or feel. Your comments will be helpful to me as a researcher to understand the situations and feelings of mothers in this study. You may use the space below and/or additional pages.

APPENDIX F

ASPEN Regional Office

Regional Health Authority #11
10003 100 Street,
Westlock, Alberta
T7P 2E8
Telephone: (403) 349-8705
Edm. Dir: (403) 424-5380
Fax: (403) 349-4879

Letter of Approval/Support to Conduct Research

November 19, 1997

To Whom it may Concern,

I am pleased to confirm the outcomes of discussions you have had with our staff regarding your proposed study on the emotional health and support available to women who have recently given birth and who live in rural Alberta. I understand that this will be a collaborative research study between yourself and the Aspen Regional Health Authority, Population Health program.

Through this partnership, it is agreed that you:

- are authorized to access program information relevant to the goals of the study, and at no cost;
- will provide Population Health with the material that is to be distributed by them;
- will maintain anonymity of clients who participate in your survey;
- will ensure the safety of clients who do participate by linking them with supports when needed;
- will analyze the data and provide a report of the findings to us; and
- will acknowledge Aspen Regional Health Authority for their contribution to this research.

Aspen Regional Health Authority, Population Health Services will:

- identify those women who fit the criteria for inclusion in the study;
- mail out the required information related to the study. They will not provide actual names of clients to you.
- will acknowledge you and your project in any related work we do.

Please forward a copy of your ethics approval letter to Mrs. Pat Popko prior to the start of the project and inform her when to start distribution of project material.

Thank you for this opportunity to work together. We look forward the hearing of the progress ahead.

Sincerely,

R.B. Cable

ROBERT B. CABLE, CEO
Aspen Regional Health Authority #11

APPENDIX G

Health Research Ethics Board Approval to Conduct the Study

University of Alberta
Edmonton
Canada T6G 2G4

Faculty of Rehabilitation Medicine
Rehabilitation Research Centre
3-48 Corbett Hall
Director (403) 492-7856 Telephone (403) 492-2903
Fax (403) 492-1626

UNIVERSITY OF ALBERTA HEALTH SCIENCES FACULTIES, CAPITAL HEALTH AUTHORITY, AND CARITAS HEALTH GROUP

HEALTH RESEARCH ETHICS APPROVAL

Date: April 1998

Name(s) of Principal Investigator(s): Gloria Leraand

Organization(s): University of Alberta

Department: Graduate Studies; Faculty of Nursing

Project Title: Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta.

The Health Research Ethics Board has reviewed the protocol for this project and found it to be acceptable within the limitations of human experimentation. The HREB has also reviewed and approved the patient information material and consent form.

The approval for the study as presented is valid for one year. It may be extended following completion of the yearly report form. Any proposed changes to the study must be submitted to the Health Research Ethics Board for approval.

Sharon Warren

Dr. Sharon Warren
Chair of the Health Research Ethics Board (B: Health Research)

File number: B-050498-NSG

APPENDIX H

Letter of Introduction from the Medical Officer of Health

ASPEN Regional Office

Regional Health Authority #11
10003 100 Street,
Westlock, Alberta
T7P 2E8

Telephone: (403) 349-8705
Edm. Dir: (403) 424-5380
Fax: (403) 349-4879

Dear New Mother:

Letter of Introduction: Research Study for Postpartum Mothers

Aspen Regional Health Authority #11 takes part in research that they feel is important in the health of people in the region. Gloria Leraand is a nurse who is in a Masters of Nursing program at the University of Alberta. She is studying depression after childbirth. Her research is about the emotional state of new mothers in rural Alberta. She is also interested in the help and support that are available to them. A better understanding of this is important so we agreed for her to do the research in our communities. We hope the information from the study will help us in the future.

This study is a survey. You will get a package of questionnaires in the mail. It will be sent when your baby is about 7 weeks old. The envelope will have a label like the one below. *It is important that the RHA protects your confidentiality, so we will not give Mrs. Leraand any names. The RHA will address the survey packages and put them in the mail.* When you mail the surveys back, they will go to Mrs. Leraand's address. No one in the RHA will know whether you take part. You do not have to take part in this study unless you want to. The care that you get from the public health nurses or any other RHA staff person will not be affected.

The title of the study is Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta. Mrs. Leraand will provide more information about the study with the questionnaires. If you have any questions about this study, you may phone her *collect* at 632-6161. You may call her thesis supervisor, Dr. Beverley O'Brien at 492-8232. You may also contact Kelly Deis, Research Officer for the Aspen Regional Health Authority, at 939-3388.

signed by

Medical Officer of Health

Gloria Leraand
POSTPARTUM SURVEY
PO Box

APPENDIX I

Information Letter from the Researcher

University of Alberta Faculty of Nursing
Edmonton
Canada T6G 2G3 3rd Floor Clinical Sciences Building

Dear New Mother:

Information Letter

I am a nurse taking my Master in Nursing degree at the University of Alberta. I am studying depression after childbirth. I want to learn how mothers of new babies in rural areas are feeling emotionally. I also want to know about the help and support that mothers have. This information may help nurses to improve the care given to mothers in the future.

The title of my study is Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta. The study has three sets of questions that take a total of about 25 minutes to answer. I also wish to get your consent for the Aspen RHA to give me the following information from the birth record: your age, your baby's date of birth, the type of delivery you had, where your baby was born, the number of pregnancies you have had, and your marital status. **If you want to be in the study, please sign the consent form that is with this letter. Then mail one copy of the consent to me with the questionnaires in the return envelope provided.** I may have the RHA send a reminder postcard in about three weeks. I will not ask you to do anything else for this study. You will not be contacted by anyone else as part of this research/study.

You do not have to answer any questions unless you want to. You are free to withdraw at any time. You may not gain anything from being in this study. You will not be harmed by taking part in this study. Taking part or not will not affect your health care. *If answering the questions in the survey causes you to be concerned about your health or how you are feeling emotionally, please contact a health care professional near you.* **Information about health services in your area is included in this package.**

Because confidentiality is important, no names will be given to me by the RHA. These survey packages are addressed by RHA staff so I do not know the names of the mothers who receive the packages. The information that you send back comes to my address, not to the RHA, and it is kept confidential. No one in the RHA or anyone else will know who answers the survey. A code number is on the questionnaires instead of your name or address so that you cannot be identified. The code number will not be on the consent form that you sign. The consent form will be separated from the questionnaires so there will be no way to identify the questionnaires by name. I will keep all information in locked cabinets. The information will be kept for at least seven years after the study is finished. A researcher may use the information from this study for another study in the future, if the researcher has approval from the appropriate ethics review committee. I may publish or give reports from this research at conferences. No names or any information that may identify you will be used in any reports.

You may call me (collect) at any time if you have questions about the research. My telephone number is 1 (403) 632-6161. You may also contact my thesis supervisor Dr. Beverley O'Brien at 492-8232. Dr. O'Brien is a nurse who is an Associate Professor, Faculty of Nursing, at the University of Alberta. Or you may contact Kelly Deis at 939-3388. Kelly is the Research Officer for the Aspen Regional Health Authority. She works at the Health Authority office in Morinville. **Thank you for taking the time to read about my study.**

Sincerely,

Gloria Leraand, R.N., B.Sc.N., MN(C), (researcher)

APPENDIX J

University of Alberta
Edmonton
Canada T6G 2G3

Faculty of Nursing
3rd Floor Clinical Sciences Building

Consent Form

Part 1

Title of Project: Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta

Principal Investigator: Gloria G. Leraand, R.N., B.Sc.N, MN(C).
Master of Nursing Program, Faculty of Nursing
University of Alberta, Edmonton
Phone: 403-632-6161, 403-634- (W)

Thesis Supervisor: Dr. Beverley O'Brien
Associate Professor, Faculty of Nursing, University of Alberta
Edmonton, AB, Phone: 403-492-8232

Part 2

Do you understand that you have been asked to be in a research study?	Yes No
Have you received and read a copy of the Information Letter from the researcher?	Yes No
Do you understand the benefits and risks involved in taking part in this research study?	Yes No
Have you had an opportunity to contact someone to ask questions and discuss this study?	Yes No
Do you understand that you are free to refuse to participate in this study? You do not have to give a reason and it will not affect your care.	Yes No
Has the issue of confidentiality been explained to you?	Yes No
Do you understand who will have access to your medical records?	Yes No

I agree to take part in this study.

Signature of Participant (Mother) Date Printed name

RETURN ONE COPY TO THE RESEARCHER

APPENDIX K

Thank-you and Follow-up/Referral Information

THANK-YOU

Thank-you for filling out the forms. If you have any questions about the study you may telephone me collect at 1-403-632-6161. The study will be finished by late this summer or in the fall. If you would like to find out about the results of the study, please contact me at the address below.

If you feel 'down' right now, or later on, it is important that you know who to talk to. This could be your doctor, a public health nurse, or a mental health therapist. A list of support and health services near you is enclosed. If you want to see a public health nurse or a therapist, call them or send the postcard that is with this letter. The scoring sheet for the Edinburgh Postnatal Depression Scale is also attached to this letter. To find out your score, add up the numbers of the answers that you circled. **If at any time you have a score of 12 or more on this scale or score more than '0' on question 10, it is important that you contact someone. If you have thoughts of harming yourself or someone else contact your doctor or a mental health therapist immediately.**

To: Mrs. Gloria G. Leraand
Vegreville, AB

YES, I would like information about the results of the study Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta. Please mail it to me at the following address:

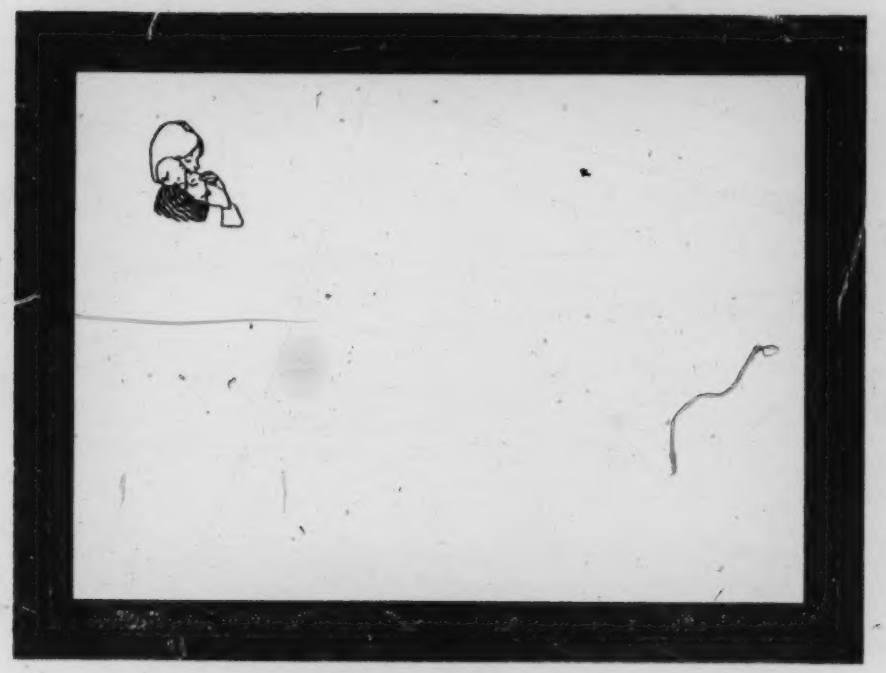
_____

_____

_____

APPENDIX L

Followup Postcard Notice



REMINDER NOTICE

A survey package was mailed to you a few weeks ago
by the Aspen Regional Health Authority.
This is a reminder notice. If you have not already done so,
please complete and return the survey.

If you did not receive this package or if it was lost or misplaced,
please phone MELODY at the RHA office, 939-3699.
She will send you another package.

If you already mailed the survey back to the researcher,
THANK-YOU VERY MUCH,
and please disregard this notice.

APPENDIX M

Health Research Ethics Board Approval to Conduct the Focus Group

University of Alberta
Edmonton
Canada T6G 2G4

Faculty of Rehabilitation Medicine
Rehabilitation Research Centre
3-48 Corbett Hall
Director (403) 492-7856 Telephone (403) 492-2903
Fax (403) 492-1626

UNIVERSITY OF ALBERTA HEALTH SCIENCES FACULTIES, CAPITAL HEALTH AUTHORITY, AND CARITAS HEALTH GROUP

HEALTH RESEARCH ETHICS APPROVAL

Date: February 1998

Name(s) of Principal Investigator(s): Gloria Leraand

Organization(s): University of Alberta

Department: Graduate Studies, Faculty of Nursing

Project Title: Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta.

The Health Research Ethics Board has reviewed the protocol for this project and found it to be acceptable within the limitations of human experimentation. The HREB has also reviewed and approved the patient information material and consent form.

The approval for the study as presented is valid for one year. It may be extended following completion of the yearly report form. Any proposed changes to the study must be submitted to the Health Research Ethics Board for approval.

Specific Comments:

This approval is for the focus group component needed for the development of the final proposal for this project. Approval for the final project will need to be sought.

Sharon Warren

Dr. Sharon Warren
Chair of the Health Research Ethics Board (B: Health Research)

File number: B-110298-NSG

APPENDIX N

Focus Group Question Guide

Opening Question

- Please introduce yourself and tell us about your baby and your other children.

Initial Reaction

- Imagine you had received this package in the mail; what would your reaction have been, do you think?
- What would you have done with it? Would you have sat down to do it all at once? Would you have done it by yourself?
- How did you feel about answering the questions and how long it took you?
- How realistic or reasonable is it to ask a new mom these questions seven or eight weeks after her baby is born?

How Effective were the Actual Questionnaires?

- What reactions did you have to the questionnaires asking how you felt in the past week?
- What did you think about the length of the questionnaires, the types of questions, and about answering two questionnaires about depression?
- How easy or difficult were the questionnaires to fill out?
- How well did the questions capture or 'get at' how you had been feeling and your experiences?
- How do you think you would have reacted to the questions if you had received the questionnaires in the mail and you had been feeling 'down' at the time "? As a probe question the mothers were asked if they had experienced these feelings before, how

did they think they would have felt about answering a questionnaire like this at that time.

Recommendations or Suggestions for Improvement to the Package

- What was your reaction to the package as a whole?
- What did you like? What did you not like?
- How do you think the package could be improved?
- What information would you add? What other changes would you suggest?

Final or Closing Questions

- If your had just one or two things to say regarding this survey, what would you say? That is, what would summarize your suggestions and thoughts? (Round robin style of summary of thoughts.)

Debriefing Questions

- Let's look back at the experience of this discussion.

  What words or phrases do you remember?

  What were the high points of the morning? What were some low points?

  How do you feel about your contribution?

  What did you gain from today?

Next Step

The researcher outlined the next steps in the research process. The women were told that they could call her directly in the few weeks following if they have anything to add. They were also told that if they wish, and if they provided their mailing address, the researcher would send them information about the results of the research study on completion.

APPENDIX O

University of Alberta
Edmonton
Canada T6G 2G3
Faculty of Nursing
3rd Floor Clinical Sciences Building

6 February 1998

Dear Information Letter to Mothers in the Focus Group

I am a nurse taking my Master in Nursing degree at the University of Alberta. I am studying depression after childbirth. I want to know how mothers of new babies in rural areas are feeling emotionally. I also want to know about the help and support that mothers have. This information may help nurses to improve the care given to mothers in the future.

The study has four sets of questions that take a total of about 30 minutes to answer. You have been asked to be in a small group of mothers to discuss what it is like to fill out these forms. Before I do the study I want to find out if the questions are clear. I also want to know what it is like for you to answer all the questions. The discussion will take about two hours. It will be tape recorded and the tapes will be written out word for word. This is so the information can be reviewed later. Only I and the person typing out what is on the tape will listen to the tape. My thesis supervisor, the typist and I are the only people who will read the written copy of the tape. I may contact you if the information on the written copy needs to be more clear. No information like your name or address will be on the question sheets. A code number is used. Information that could identify you will be erased from the tape and the written copy. I will keep the tapes and all written information in a locked cabinet. The code list with names and addresses will be kept locked separately. The information and the code list will be kept for at least seven years after the study is finished. The consent forms will be kept for at least five years after the study is finished. They will be kept in a locked cabinet separate from the other information. A researcher may use the information from this study for another study in the future, if the researcher has approval from the appropriate ethics review committee.

You will not be harmed by taking part in this group. You may not gain anything from being in this group. You do not have to answer any questions or discuss any subject unless you want to. You are free to withdraw from this group at any time. Taking part or not will not affect your health care. If you want to be in this group, please sign the consent form that is with this letter and give it to me.

I may publish or give reports from this research at conferences. No names or any information that may identify you will be used in any reports. You may call me at any time if you have questions about the research. My telephone number is 1 (403) 632-XXXX.

If you have anything that you wish to discuss about this research you may contact Kelly Deis at 939-3699. She is the Research Officer for the Aspen Regional Health Authority. She works at the Health Authority office in Morinville.

Sincerely,

Gloria Leraand

Gloria Leraand, R.N., B.Sc.N.

APPENDIX P

University of Alberta
Edmonton

Faculty of Nursing

Canada T6G 2G3

3rd Floor Clinical Sciences Building

Part 1 Consent Form for the Focus Group

Title of Project: Social Support and Risk of Depression at Eight Weeks Postpartum in Mothers in Rural Alberta

Principal Investigator: Gloria G. Leraand, R.N., B.Sc.N.
Master of Nursing Program, Faculty of Nursing
University of Alberta, Edmonton
Phone: 403-634-

Thesis Supervisor: Dr. Beverley O'Brien
Associate Professor, Faculty of Nursing, University of Alberta
Edmonton, AB, Phone: 403-492-8232

Part 2

Do you understand that you are asked to be in a group to talk about questions that are part of a research study?	Yes No
Have you received and read a copy of the Information Letter from the researcher?	Yes No
Do you understand the benefits and risks involved in taking part in this group?	Yes No
Do you have the opportunity to ask questions about this group and the study?	Yes No
Do you understand that you are free to refuse to participate in this group? You do not have to give a reason and it will not affect your health care.	Yes No
Did the researcher explain to you the issue of confidentiality?	Yes No
Do you understand who will read (have access to) your information?	Yes No

I agree to take part in this focus group discussion .

Signature of Participant (Mother)	Date	Signature of Researcher
Printed Name		Printed name

APPENDIX Q

Reply to Request to Use the Beck Depression Inventory

THE
PSYCHOLOGICAL
CORPORATION®

The Psychological Corporation
555 Academic Court
San Antonio, Texas 78204-2498
Tel 210-299-1061
Telex 5106015629 TPCSAT
Fax 210-270-0327

March 2, 1998

Ms. Gloria G. Leraand
Graduate Nursing Student
Faculty of Nursing
University of Alberta
3-134 Clinical Sciences Building
Edmonton, Alberta T6G 2G3
CANADA

Dear Ms. Leraand:

Thank you for your fax of February 27 regarding the use of the *Beck Depression Inventory – Second Edition* (BDI-II).

Unfortunately, we are unable to grant this request due to the nature of your test administration. We do not believe that secure test materials should be mailed or provided to individuals outside of the supervision of a qualified individual. There is no way for you to ensure that all materials mailed will be returned to you or that they will not be reproduced or copied in any manner prior to return.

If you can alter your method of test administration so that the testing will occur under direct supervision for the security of the test instrument, we will be happy to reconsider your request.

Thank you for your cooperation and interest.

Sincerely,

Christine Doebbler

Christine Doebbler
Manager
Legal Affairs